## PURCHASING

MARCH, 1949

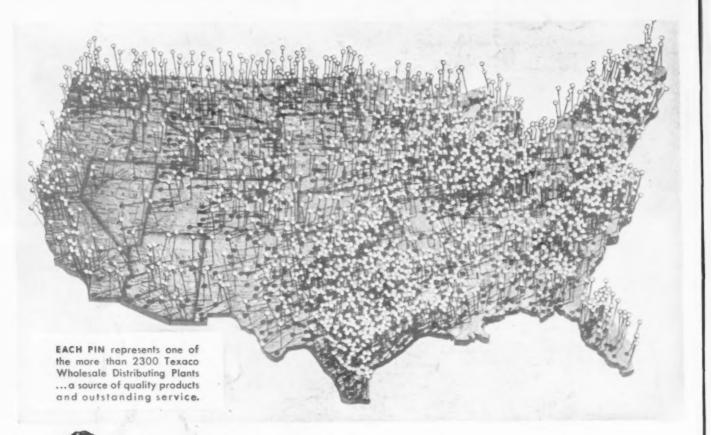
C. G. McLaren:

What N. A. P. A. Means To Me

See Page 89

Pages 83-87

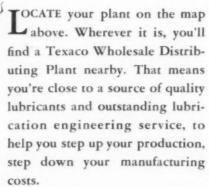
Table of Contents



"What a lubrication set-up!"

"No wonder Texaco is helping so many plants

increase production and reduce unit costs!"



Texaco Lubrication Engineers work with production men in plants of every type and size, in every industry, throughout the 48 States. They know the ins-and-outs of production under all conditions. Your Texaco Lubrication Engineer can draw on all the resources and experience of this unique, nationwide set-up.

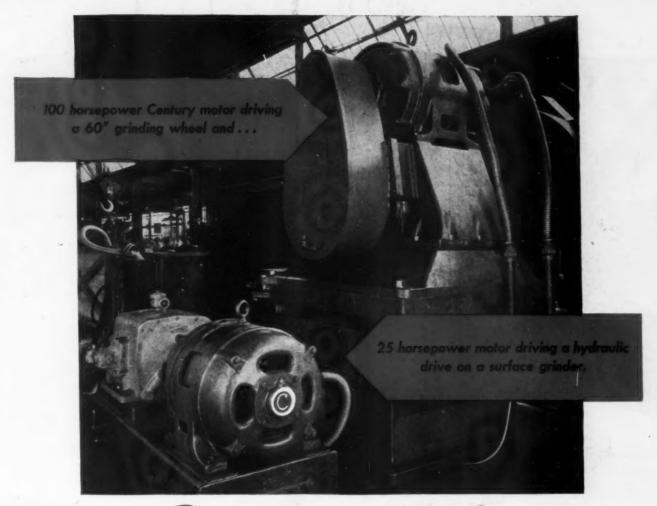
Call in a Texaco Lubrication Engineer to help map a money-saving lubrication program for your plant. Just contact your local Texaco Wholesale Distributing Plant, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



TEXACO Lubricants, Fuels and Lubrication Engineering Service

Tune in...TEXACO STAR THEATRE presents MILTON BERLE every Wednesday night. METROPOLITAN OPERA broadcasts every Saturday afternoon.



#### 100 H. P. Centure MOTOR - Driving a 60"

#### Grinding Wheel Provides a Smooth Production Combination

This 100 H.P. Century Motor operating a huge 60" surface grinder and the 25 H.P. Century motor operating the feeder mechanism, is one of the hundreds of thousands of Century drives used in the precision production industries.

ts

er

d

n-

ıl

g

SI

1.

The unusual freedom from vibration designed and built into Century motors, contributes to the precision grinding at the business end of the grinder that wasintended by the manufacturer of this fine tool. The rugged mechanical design of Century motors are suitable not only to precision applications like this but also for the heavy shock loads required in some industrial operations.

From Century's wide range of types and kinds of motors, in sizes from 1/6 to 400 horsepower, you can select the correct motor to meet the exact requirements of your machines. The properly selected Century motor on your machine tools, conveyors, processing machinery, etc., helps to increase productivity, keep maintenance costs low and reduce plant shutdowns caused by improperly applied motors.

Specify Century motors for all of your electric power requirements.

Popular types and ratings are generally available from factory and branch office stocks



#### CENTURY ELECTRIC COMPANY

1806 Pine St., Saint Louis 3, Missouri
Offices and Stock Points in Principal Cities

-608

PURCHASING published monthly, by PEEAYE, INC., subsidiary CONOVER-MAST PUBLICATIONS. INC. Publication Office, Orange, Conn. Editorial and Executive Offices, 205 East 42nd St., New York 17, N. Y. Entered as second class matter August 5, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1878. Subscription rates: United States, U. S. Possessions and Canada: 84 per year, 85 for two years; elsewhere 85 per year, \$10 for two years; elsewhere \$6 per year, \$10 for two years; e



#### Turn on the steam-it can't burst B. F. Goodrich Burstproof hose!

Ends bazards of scalding and injury from bursting bose wall

BURSTPROOF steam hose (developed and perfected by B. F. Goodrich) is accurately named-it is completely burstproof. Steam or steam pressure cannot burst the hose wall; this hose can only be ruptured by a blow from outside that actually cuts the wire reinforcement.

Burstproof hose has no cotton fabric to burn, char, and give way. Hightensile steel wire takes the place of the fabric plies, which in other hose burn and then collapse. Here is a hose as strong and safe as steam hose can be made.

Rubber compounded to beat the heat -Heat is the enemy of steam hose. The tube in BFG Burstproof is specially compounded for safety, to resist deterioration at high temperatures. The B. F. Goodrich anti-oxidant Agerite keeps the tube live and elastic, with sufficient "flow" to allow the steel wire reinforcement to anchor itself in the rubber. A braid of strong asbestos cord (woven asbestos fabric in some sizes) imbedded just under the cover, protects it from chars and burns, protects the worker who handles it.

Armored with steel-The steel wire reinforcement is braided at the angle of greatest strength. Multiple wire strands are paralleled, to give more strength than a woven tape. Braid openings permit the wire braid to "rivet" itself to the layers of rubber, thus increasing strength and safety. Wire winding in the larger sizes is useful in resisting sharp bends or kinks.

BFG Burstproof is the safest, strongest hose in steam service. Recommended especially for saturated steam pressures up to 200 p.s.i., for super-heated steam up to 388° F., and for all applications that are hard on steam hose. See it at your local distributor or write: The B. F. Goodrich Company, Industrial Products Division,

#### B.F. Goodrich



#### How To Cut Your Steel Requirements

25%

Squeeze the "DEAD WEIGHT" out of Your Product



You can eliminate the extra tons which add only dead weight to your product by using Inland HI-STEEL instead of ordinary structural grade carbon steel. HI-STEEL has nearly twice the working strength of ordinary structural grade carbon steel, and 50% greater ability to stand up under impact loads. That's why, with HI-STEEL, it is practical and safe to reduce sectional thicknesses—cutting your steel tonnage requirements approximately 25%. In addition to its high strength-to-weight ratio, HI-STEEL has about five times the atmospheric corrosion resistance of ordinary carbon steel and is far more resistant to abrasion. Write for booklet. Inland Steel Co., 38 S. Dearborn St., Chicago, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

HI-STEEL meets the requirements of SAE Specification 950

INLAND

INLAND HI-STEEL

Reg. U. S. Pat. Off.

THE LOW ALLOY HIGH-STRENGTH STEEL



"I told you to get a tractor put together with Circle ® Fasteners."



6

# Oshorio = Formula for Keeping 16 ACRES\* NEAT-AS-A-PIN!

\*700,000 sq. ft. of plant area "Ship Shape" with longer lasting Osborn paint and floor sweeping brushes

THE Cleveland Graphite Bronze Co., Cleveland, Ohio, believes that plant cleanliness contributes to precise, efficient operation. And keeping "the world's largest producer of line bearings and bushings" neat and tidy provides a full-time job for 109 maintenance men.

To that end Osborn Brushes—longer lasting cleaning tools that cut maintenance costs—play a significant part. With 700,000 sq. ft. of floor space or more than 16 acres of cleaning area requiring daily attention, these lightweight "workbalanced" Osborn Brushes reduce fatigue, speed plant cleaning, save man hours. For maintenance costs are 99% labor and poor cleaning tools add to overhead by slowing down efficiency of cleaning personnel.

With today's high break-even point in plant operation, industrial America is alerted to the need for more effective time and labor saving tools. And Osborn Power Driven Brushes, Paint Brushes and Maintenance Brushes are serving cost-conscious companies by lowering production and maintenance costs.

For more "Brush Facts", get in touch with your local Osborn Industrial Supply distributor or write to...



Osborn Brushes

#### THE OSBORN MANUFACTURING COMPANY

Dept. 123, 5401 Hamilton Avenue

Cleveland 14, Ohio

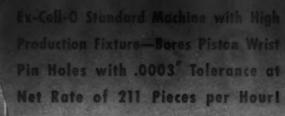
WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY . POWER DRIVEN BRUSHES . PAINT BRUSHES . MAINTENANCE BRUSHES



EX-CELL-0!

For Example:

The high Figure on Each Office Provides hydraulic locating and stamping. Operation is tied in with machine cycle. The addition of two interchangeable sets of lower work centers and locating pins adapts the fixture for the whole group of pistons.



The Precision Boring Machine shown to left above (Ex-Cell-O Style 112-C) bores piston wrist pin holes at a rate of 211 pieces per hour, holding a tolerance of .0003" on the bore diameter, and providing a fine surface finish. The high production fixture accommodates a wide variety of similar pistons. Ex-Cell-O machines like this are also widely used for precision turning, facing and grooving operations. If your production involves parts like this, call your local Ex-Cell-O representative, or write Ex-Cell-O in Detroit today!

### EX-CELL-0

49-5



DETROIT 32, MICHIGAN

Special Multiple Way-Type Precision Boring Machines • Special Multiple Precision Drilling Machines • Precision Boring, Turning, and Facing Machines and Fixtures • Precision Cylinder Boring Machines • Precision Thread Grinding Machines • Precision Lapping Machines • Precision Broach Sharpening Machines • Other Special Purpose Machines • Tool Grinders • Continental Cutting Tools • Broaches and Broach Fixtures • Counterbore Sets • Grinding Spindles Hydraulic Power Units • Drill Jig Bushings • R.R. Pins and Bushings • Fuel Injection Equipment • Dairy Equipment • Aircraft and Miscellaneous Production Parts



EVER stop to think that steel wire is one of the most versatile of materials? For example, its strength, flexibility, hardness, finish and other qualities can be varied greatly, can be combined in infinite variation to afford ideal behavior for countless exacting jobs.

Learning how to do this successfully, then doing it, is one of the things that distinguishes the Worcester Wire Works of National-Standard. Here there's a concentration of 30 years' experience in producing fine, special-purpose wire—wire of many types you'll never find on "warehouse shelves".

If you produce springs or other wire items, if you use round or flat wire in any form in your products, perhaps our unusual development service and special processing techniques can save or make money for you. Why not find out? As always, we welcome the chance to be of help.



DIVISIONS OF NATIONAL-STANDARD CO.



Plus greatest plug-in safety...
Federal Noark Bus Duct

FOR PLUG-IN POWER where you want it, when you want it, be sure you get the extras that come in industry's "convenience outlets"... Federal Noark Bus Duct. Utmost flexibility... insulated openings for complete safety in applying and removing plug-in devices.

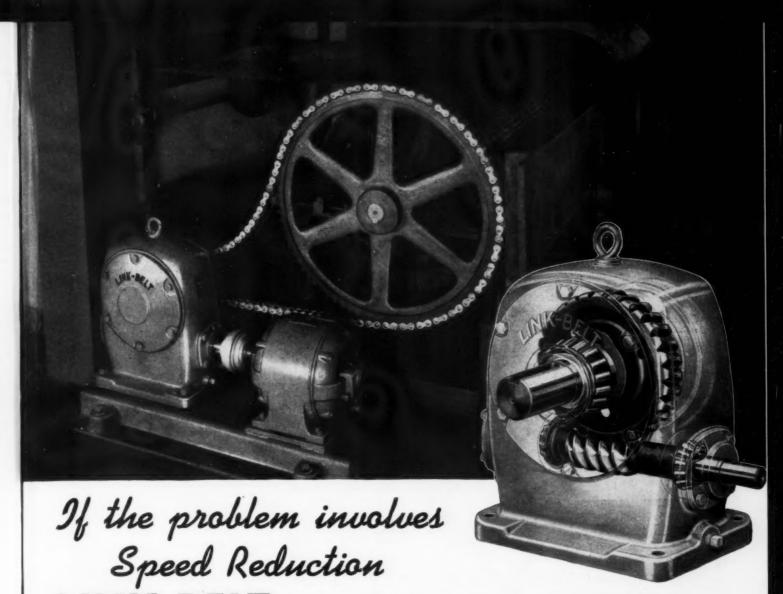
Federal Noark Bus Duct has fourchannel strength—sides, top and bottom are all rigid. Rugged bus bar insulators are mounted on 12" centers for high electrical safety and mechanical strength. Adjustable hangers reduce both installation time and cost. Contacts at bolted connections are silverplated.

See your Federal Distributor about Federal Noark Bus Duct. And write us for your copy of Bulletin 180 giving full descriptions and data. Federal Electric Products Company, 50 Paris St., Newark 5, New Jersey.



FEDERAL NOARK

Complete line of Federal Electric Products includes Motor Controls, Safety Switches, Service Equipment, Circuit
Breakers, Panelboards, Switchboards, Bus Duct \* Sales offices in principal cities.



LINK-BELT experience may help you..

Any application for a speed reducer can be filled with a Link-Belt enclosed gear drive—and satisfactory results assured. Link-Belt manufactures all standard types, and Link-Belt power transmission specialists can offer reliable recommendations as to size and type to suit your precise need.

Herringbone Gear Speed Reducers for large reductions in limited space—high shock resistance — single, double or triple reductions. Send for Book No. 1819; Worm Gear Speed Reducers for high ratio reductions, horizontal or vertical drive shafts. Data in Book No. 1824; Link-Belt Gearmotors, self-contained power unit. Book No. 1815.

In respect to any drive in the broad Link-Belt line of power transmission machinery, Link-Belt engineering advice is completely unbiased.

#### TYPES OF LINK-BELT POWER TRANSMISSION MACHINERY

Silverlink Roller Chain Silverstreak Silent Chain Steel and Malleable Chain Worm Gear Drives Herringbone Gear Drives Helical Gear Drives Gearmotors

P.I.V. Variable Drives
Fluid Drives
V-Belt Drives
Ball Bearings
Roller Bearings
Babbitted Bearings
Couplings, Clutches, Collars, etc.

LINK-BELT COMPANY Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24,

Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in Principal Cities.



Power Transmission Machinery



- ☐ 1. ALUMINUM SPECIFICATIONS—"Aluminum Alloys U. S. Standard Specifications" handbook 24 pages (not a sales manual) consolidates latest specifications of ASTM, AMS, SAE, Federal, Army, Navy, and others, as they pertain to aluminum sand castings, permanent mold castings, die castings, wrought alloys and ingots. Federated Metals Divn., American Smelting & Refining Co.
- ☐ 2. HEAT TREATING EQPT.—Catalog B-7, 36 pages, describes heat treat handling equipment of heat and corrosion resistant fabricated alloys, such as muffles, retorts, carburizing boxes, trays, racks, baskets, discs, fixtures, etc. Rolock, Inc.
- ☐ 3. THERMOCOUPLES & Pyrometer Accessories—"Buyers' Guide and Users' Manual" bulletin P1238, 56 pages of detailed information; technical section called "Users' Manual" contains engineering data. "Buyers' Guide" section is indexed and illustrated. The Bristol Co.
- ☐ 4. MILLING MACHINES—Catalog M-1662 covers milling machines 2ML and 2MI. The former are built in plain and universal types only, and the latter in plain, universal and vertical types. The machines feature 16 spindle speeds, 60 to 1 ratio, and 16 feeds 120 to 1 ratio. Cincinnati Milling & Grinding Machines Inc.
- ☐ 5. ROUGH GRINDING—"Norton Wheels for Rough Grinding" are the subject of catalog-manual giving information on abrasives and bonds, wheel selection, different types of grinding, mounted wheels and points, etc. Norton Company.
- □ 6. WATER COOLER—Electric drinking water cooler, Model M-10, with hermetic completely sealed refrigerant system covered by a 5-year replacement warranty, is detailed in Folder M-10-19. Cordley & Hayes.
- ☐ 7. DRILLS—Catalog No. 48 is described as being the most complete and easy-to-use drill catalog ever published. It contains 2165 different items, and conforms with all changes in drill dimensions recently made by the ASA. Listings also include taper shank drills, three flute. "Hi-Brinell", bonding and tell-tale drills, plain sleeves, center keys and steel sockets. Ace Drill Corp.
- □ 8. PAINTS—"Plan before you Paint your Plant" is title of colorful, practical booklet that contains the Dial-A-Tone color selector, which simplifies color selection for ceilings, walls and dado. In addition to the color selector, there is page of chips showing ceiling, wall and dado finishes.

Purchasing agents, maintenance engineers and others will find the book a practical painting help. Valdura Divn., American-Marietta Co.

- 9. PENCILS, CRAYONS, BANDS—Comprehensive, colorful Centennial Catalog 1949 of more than 70 pages lists pencils, colored pencils, erasers, marking crayons, stamp pads and inks, kneaded rubbers, draftsmen's holders and leads, type cleaners, etc., and even rubber poker chips. Eberhard Faber Pencil Co.
- ☐ 10. FILTER PAPERS—Catalog 70, 36 pp., details American filter papers for use in chemical analyses and biological procedures. It also contains reference tables for filtrations in methods of inorganic chemical analysis. Carl Schleicher & Schuell Co.
- ☐ 11. OVEN CHAIN LUBRICATION—Bulletin 31 covers oven chain lubricators for automatically applying lubricants (graphited) to conveyor chains on ovens, furnaces, dryers, etc. Bel-Ray Company, Inc.
- ☐ 12. STEEL TUBING—Five data and conversion tables useful to anyone dealing with steel tubing are offered by The Babcock & Wilcox Tube Co.; #115, Tolerances of Round Seamless Steel Mechanical Tubing; #112, Metric Conversion Table; #103, Wall Thickness Data for Seamless and Welded Tubing; and #125, Hardness Conversion Tables, giving relations between hardness by various testing systems.
- ☐ 13. DRAFT FAN SPEED CONTROLS—20 pp. booklet, 4400-TEC-1078, "Precision Speed Control for Boiler Draft Fans with the Regutron Controlled Magnetic Drive", is available from Electric Machinery Mfg. Co.
- ☐ 14. PETROLEUM PRODUCT PUMPS—Bulletin PM48 details self-priming centrifugal pumps for handling petroleum and other volatile liquids. It includes tables on viscosities at various temperatures, head equivalents, suction lifts, friction loss, etc. Pumps are available in engine driven models and electric motor driven models. Marlow Pumps.
- ☐ 15. STEEL MAKING—"How Steel is Made" is subject of 64-page booklet, gives historical outline of steel making and describes the many phases of modern steel production, from mining raw materials to rolling. It is written in non-technical language. Inland Steel Co.
- ☐ 16. SILICONE RUBBER—Bulletin CDP-584, 24 pp., describes G-E silicone rubber.

Devoted to the heat resistant, mechanical, electrical and chemical resistant properties of the material, as well as applications, the bulletin discusses fundamentals and the performance of the rubber. Chemical Department, General Electric Co.

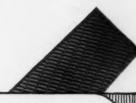
- ☐ 17. MOULDINGS—Bronze mouldings are the subject of AIA File 23-1, which gives details and illustrates tee sections, angles, flat strips, coves, edgings, thresholds, etc. The Loxit Moulding Co.
- □ 18. MATERIALS HANDLING—Bulletin 5101 describes gasoline-powered industrial trucks known as the "Lift King" gas truck line, featuring fluid drive, automotive controls, and general simplicity of operation. Another feature is high lifting speed of 30 ft. per minute at full load. Power plant is Chrysler 6-cyl. industrial engine of 65 brake horsepower. Yale & Towne Mfg. Co.
- ☐ 19. ANHYDROUS HF—Hydrofluoric Acid Anhydrous im the title of 36 page booklet written to provide helpful data for those who now use HF or are considering its use. Copy will be sent to you by The Harshaw Chemical Co.
- ☐ 20. "COLD" ARC WELDING—Circular describes new process and electrode for the "cold" arc welding of cast iron, which is claimed to solve the problem of welding cast iron without the need of preheating. Eutectic Welding Alloys Corp.
- ☐ 21. FLEXIBLE SHAFTING—Catalog No. 49 describes flexible shafts and flexible shaft machines for wide diversity of operating requirements and conditions, accessories and assemblies ready to attach to any power source. Elliott Manufacturing Co.
- ☐ 22. INDUSTRIAL GAS BURNERS—Bulletin 7C describes Pow-R-Semblies—packaged industrial gas burner assemblies complete with pressure blowers. Units are applicable to boilers, air heaters, dryers, kilns, ovens and other equipment. Size range: 400,000 to 6,600,000 btu/hr output. Bryant Heater Co., Industrial Divn.
- ☐ 23. BRONZE TABLETS—That is the title of 28-page booklet describing variety of bronze signs and plaques for numerous uses and purposes. United States Bronze Sign Co., Inc.
- ☐ 24. SPEED REDUCERS—Speedaire worm gear speed reducers, fan cooled, which make for savings in space and weight are the subject of Catalog 300. The Cleveland Worm & Gear Co.
- □ 25. LATHES—Catalog 100-G, 64 pages, presents complete line of 9", 10",  $14\frac{1}{2}$ ", 16" and 16/24" swing precision quick change gear and toolroom lathes, and  $\frac{1}{2}$ " and 1" collet capacity turret lathes, and major lathe attachments and accessories. South Bend Lathe Works.
- ☐ 26. SPROCKETS—Catalog 48, 80 pp., presents technical data on roller block and silent chain and also chains on sprockets, reducers and punch press drives. This sprocket reference book contains some 70 pages giving specifications of definite aid to buyers in determining requirements. Cullman Wheel Co.
- ☐ 27. WORK HOLDERS—Manual describes Vi-Speed air-powered work holders, which provide 0-3½ tons jaw pressures, holding

(Please turn to page 14)

ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE Three Pages — 12 - 14 - 16

Use convenient prepaid postcards on pages 19 & 20







"No excuse for file abuse," says Pop the foreman. On mass-production especially, the proper use and care of files enter heavily into savings in man-hours, materials and new-file costs. Here are some timely suggestions worth posting in tool-rooms, on shop bulletin boards, and over work-benches:

- · Don't throw files among other tools or objects.
- Don't lay files on top of, or stack them against, one another.
   Keep them separate—either standing with tangs in holes, or hung on racks by their handles.
- Keep files in a dry place, so rust will not corrode their cutting edges.

- Keep files clean of filings. Tap file frequently on wood (not on metal) to loosen chips. Also brush with file brush or "card."
- · Don't put too much pressure on the forward, or cutting, stroke.
- · Never "drag" file back under needless pressure.
- · Use The right file for the job.

The better the file the greater the reward of care. Nicholson and Black Diamond brands—sold through industrial distributors—are of the highest quality . . . made to serve long under normal circumstances, still longer under proper use and care.

• HOW TO USE AND TAKE CARE OF FILES is elaborately covered in Nicholson's famous 48-page illustrated book, "FILE FILOSOPHY." How many copies for "key" uses shall we send you? FREE.



NICHOLSON FILE CO. . 28 ACORN STREET, PROVIDENCE 1, RHODE ISLAND

(In Canada, Port Hope, Ont.)



NICHOLSON FILES FOR EVERY PURPOSE



#### (Continued from page 12)

light work without injury, or heavy pieces for chipping, etc. Units are foot operated and can be mounted anywhere and in any position, requiring only a firm bench, post or wall. Van Products Co.

- ☐ 28. WELDING STUDS—4-page bulletin details new line of 60 standard M-G studs, specially designed for end welding with automatic stud welding gun; range covers diameters from ¼" to ½", and lengths 1" to 3½". It also shows partial line of special purpose studs. Nelson Stud Welding Divn., Morton-Gregory Corp.
- ☐ 29. GRAVITY CONVEYOR—Catalog RWC 48 describes Rapid-Wheel gravity conveyor, for economical movement of cases, cartons, boxes and other materials with firm running surfaces. It includes illustrations of construction and applications of types and sizes, and copy explains most adaptable use for each model. The Rapids Standard Co., Inc.
- 30. MACHINE & BENCH LIGHTING—Catalog 65B illustrates and describes Ajusco machine and bench lighting brackets which enable operator to direct light to the exact spot desired, providing ideal lumination with low wattage bulbs. Shadows and glare are eliminated as source of light is close to work in front of operator. Adjustable Fixture Co.
- ☐ 31. RING PACKING—Tech. Bulletin 918 describes new ring packing in Palmetto packing series, known as Palmetto G-T Ring, which eliminates damaging effect of extrusion of packing material into clearance space between mating parts. The packing is supplied in two styles; one is the external or piston type seal, and the other the internal or rod type seal. Greene, Tweed & Co.
- ☐ 32. CENTRIFUGAL DIE CASTING—Detailed information on the Centri-Die process of centrifugal casting in permanent molds is contained in bulletin. "Centri-Die Castings". Process is said to make for higher quality castings, uniformity of casting strength, use of alloys which are difficult or impossible to forge, and ready production of assorted parts and complex shapes. Lebanon Steel Foundry.
- □ 33. MOBILE STORAGE BINS—Rolstone mobile unit storage cabinets and bins are the subject of illustrated 6-page bulletin which shows how the system increases existing storage capacity up to 50%. Units move on rails in the floor. Two or three rows of mobile units can be installed in front of a row of fixed units. Acrow, Inc.

- □ 34. PROTECTIVE COATING—Bulletin 1530 describes Apexior No. 1 protective coating for boilers and other equipment in wetheat service. Applied to new or to newly cleaned surfaces it is said to preserve for the full life of an installation the initial efficiency of sound, smooth metal. It protects metal at any degree of wet heat from 200 deg. F. to highest operating temperatures. Does not retard heat transfer. The Dampney Co. of America.
- ☐ 35. INDUSTRIAL BEARINGS—Catalog 490, 84 pp., details bushings, bearings, bar bronze, babbitt, new sizes of general purpose bearings and electric motor bearings, and self lubricating bearings. Johnson Bronze Co.
- ☐ 36. COPPER ALLOY Specifications— "Copper and Copper Alloy Specifications Index". Pub. B-34, new edition, 28 pages, lists most generally used alloys, together with applicable specifications and specifications in numerical order with description of grade, type, temper, anneal, etc. American Brass Co.
- ☐ 37. SPEED TRANSMISSION. CONTROLS

  —Bulletin GN 487 discusses automatic production control through use of Reeves variable speed transmission, and Motodrive in conjunction with automatic controls. Hydraulic automatic control, mechanical automatic control, differential automatic control and various speed indicating mechanisms are described. Reeves Pulley Co.
- □ 38. WIRE CLOTH—Catalog B, new, covers wire cloth for every use, available in various metals and alloys in plain, twilled or locked weaves, normally woven in widths from 24 to 48 inches in rolls of 100 lineal feet. It tells how to select and order, and contains dictionary of wire cloth terms. Reynolds Wire Co.
- ☐ 39. LARCH LUMBER—"Larch of the Western Pine Region", its properties, uses and grades, AIA File No. 19, 52 pages, gives general information on larch, its general uses, and heavy construction and industrial uses. Full page illustrations of boards indicate the grading. Western Pine Association.
- ☐ 40. A-C CONTACTORS—Bulletin 4454-4455 details a-c magnetic contactors for commercial and industrial control applications. Size 4 is available with maximum of 5 main poles, and Size 5 with two or three poles only. Both sizes available with open type construction or NEMA Type 1 enclosures. Ward Leonard Electric Co.
- 1 41. CUT-OFF & POLISHING WHEELS
  Bulletins 4948B and 1948BR cover rubber

bonded abrasive cut-off wheels, resinoid bonded cut-off wheels, rubber bonded polishing wheels, and ball race grinding wheels. Data includes specifications and information on ordering. The Allison Co.

- ☐ 42. HUMIDIFIERS—Bulletin 1711, 12 pages, covers steam humidifiers for automatic control of RH for prevention of dry air damage to hygroscopic materials in sterage or in process. Eight models are described. Armstrong Machine Works.
- □ 43. HYDRAULIC DIE CASTING—Bulletin 4803 titled "Fer Low Cost Metal Parts", discusses the advantages of hydraulic die castings as a means of producing precision metal parts. Submerged plunger and cold chamber types of hydraulic die casting machines and parts are described in detail. The Hydraulic Press Mfg. Co.
- ☐ 44. ELEVATING TABLES—Bulletin 261 describes the use of hydraulic elevating tables for transporting and leveling strips and sheets to proper working height. Photos and specifications cover models in capacities from 2000# to 10,000#. Lyon-Raymond Corp.
- 1 45. METER SOCKETS—Bulletin shows 11 views of Series 9000 meter sockets for single phase meters only, stating they have been approved by majority of utility companies using type "S" meters, and that test shows they will carry 100 amps. continuous load for several hours without undue temperature rise. Anchor Mfg, Co.
- ☐ 46. FILES—American Swiss milled, curved-tooth files, available in 150 shapes, cuts and sizes, for metals, alloys, and hard non-metallic substances, are subject of new bulletin. American Swiss File & Tool Co.
- ☐ 47. DRILLING MACHINES—Catalog 68 describes two models of drilling machines. The Model D has V-belt drive direct from motor to à 4-speed geared transmission and an "inching" button at the front of the machine which provides ease in changing speeds. Sibley Machine & Foundry Corp.
- ☐ 48. HEAT SEAL PAPERS—The subject of dry labeling, taping, wrapping with heat instead of water moistenable adhesives is covered by Technical Manual, Third Edition. It describes two general types of thermoplastic adhesives, which stick to most common packaging materials and many difficult-to-label surfaces. Nashua Gummed and Coated Paper Co.
- 49. DIES, STAMPINGS—"Hatching Ideas into Dies" is subject of booklet describing the die service and production facilities of the Mardigian Corp.
- ☐ 50. NEW HAND TRUCK—Circular describes the Escort hand truck which in addition to typical two wheels, has caterpillar treads which makes for easy handling of loads over curbs, up and down stairways, etc. One design has central retractible swivel wheel. Associated Services.
- ☐ 51. ELECTRIC CONNECTORS—GEC 400, 38 pages, illustrates and gives detailed information on electric connectors—block and stud, straight and tee, block terminal, tubing terminal, stud to bar, straight, angle, expansion, etc., etc. Apparatus Dept., General Electric.
- [] 52. ELEC. STEAM RADIATOR—Auto-(Please turn to page 16)

#### ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE

Three Pages — 12-14-16
Use convenient prepaid postcards on pages 19 & 20

You get better service wherever you see this sign



There's a Macwhyte Rope that's the right rope for your equipment. All job-proved — a thousand and one wire ropes to choose from.

Our distributors and mill depots—located at convenient points all over the country—carry stocks for immediate delivery. Ask a Macwhyte representative to recommend the rope best suited for your equipment.

#### MACWHYTE COMPANY

2918 Fourteenth Avenue · Kenosha, Wisconsin

Manufacturers of Internally Lubricated Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal and Stainless Steel Wire Rope.

Catalog on request

For easy handling and longer service

Use PREformed Whyte Strand Wire Rope—it's





(Continued from page 14)

matic electric steam radiator, available in portable and stationary models, is described in new four-page bulletin. Radiator is thermostatically controlled to maintain temperature, and shuts off automatically when temperature is reached. It is made in six sizes, 110-120 volts, a-c, d-c. Koral Electric Manufacturing Co.

- ☐ 53. WASTE RECEPTACLES—Catalog, 8 pp., describes waste receptacles for plant or outdoor use, fitted with non-rusting stainless steel feet. Standard units are available with removable galvanized, all-welded liners. The Bennett Manufacturing Co.
- ☐ 54. HYDRAULIC CYLINDERS—Catalog section 103, 20 pages, illustrates and describes standard hydraulic cylinders with variety of mounting styles; bore diameter specifications furnished from 2 to 10 inches; cushioned cylinders in each model are also given. Geroter May Corp.
- □ 55. INDUSTRIAL THERMOMETER—Bulletin describes stainless steel thermometer claimed to cover practically every industrial use. It comes in 5", 3", 2¼" and 1" dial sizes and stem lengths from 4" to 42". Calibration is for maximum accuracy in Fahrenheit scale. Centigrade ranges available. Thermometer may be placed into hot materials without pre-heating. Can be screwed into tanks, steam lines, air ducts, etc., or with cork floated in open tanks. W. C. Dillon & Co., Inc.
- ☐ 56. PACKINGS—"Packing for the Chemical Industry" is title of booklet that tells about packing requirements for practically all chemical applications. Section is devoted to Chemion, new development in chemically inert packings, which is completely inert in most chemicals with the exception of molten alkali metals. Styles include braided form and molded rings. Crane Packing Co.
- ☐ 57. MICROSCOPES Measuring Microscopes for Laboratory and Shop are the subject of Bulletin 161-48; also, traveling microscopes, micrometer slide comparators, instruments for measuring creep, thermal expansion, etc., and various accessories; 24 pp. The Gaertner Scientific Corp.
- ☐ **58. BRAKEMOTORS**—A-c and d-c brake motors, series or shunt wound, ½ to 60 hp., standard frame sizes 155-445, are the subject of Bulletin B-501. These are integral units. Maker states brakemotor will stop and hold a motor in less time than the motor consumes in acceleration. Star Electric Motor Co.

- ☐ 59. MOTOR STARTERS—Bulletin 14B7132, describes line of alternating current full voltage starters designed to meet the requirements of any type of motor drive. Construction features and uses of manual and magnetic across-the-line starters, across-the-line combination starters, reversing starters, and push-button control stations are described and illustrated. Allis-Chalmers Mfg. Co.
- ☐ 60. FILTERS—Laboratory and pilot plant filters are described in Bulletin 251-R. The line includes continuous, horizontal, precoat, and pressure filters, designed for different types of materials. Oliver United Filters, Inc.
- ☐ 61. BATTERIES—Exide Manchex Batteries in Sealed Glass for all stationary power applications are described and illustrated in 8-page bulletin. The Electric Storage Battery Co.
- ☐ 62. DOUGLAS FIR—52-page booklet describes Douglas Fir of the Western Pine Region, and its properties, uses and grades. Uses are illustrated, and full pages pictorialize grades and factors in grading. AIA file 19. Western Pine Association.
- ☐ 63. INSULATION TESTER—Megohmer insulation and resistance testers are the subject of bulletin No. 1248. Line consists of both the d-c generator (hand crank type) and the non-cranking, battery-vibrator type. Herman H. Sticht Co., Inc.
- ☐ 64. DUST COLLECTOR—"Midget" model 335 Dustkop dust collector, claimed to be the smallest of the type, is described in Bulletin A-555 which also contains recommendations for its installation and use on small surface grinders, bench grinders, tool grinders, disc and belt sanders, etc Aget-Detroit Co.
- ☐ 65. CARBIDE DIES, TOOLS, ETC.—Revised Die and Wear Parts Catalog 48-3P, 36 pp., gives full particulars on Talidetipped centerless grinder blades, sheet metal draw dies, wire and tube dies, bolt dies, drill jig bushings, gages, solid carbide bars, tubes and wear strips. The Metal Carbides Corp.
- ☐ 66. VALVES—Booklet 311 describes Full-Flow, In-Line valves, and diagrams large and small three-way and straightway valves. The large are solenoid airpilot operated, and the small are direct solenoid operated. They are suitable for machine tools, jigs and fixtures, etc. Ross Operating Valve Co.
- ☐ 67. DRUM FINISHING—4-page folder

describes line of manual and automatic drum finishing units. These include drum rotating unit, semi-automatic painter that paints and stripes up to 450 drums per hour, and chime painter which automatically paints chimes in vertical position. Eclipse Air Brush Co.

- ☐ 68. LABORATORY FURNACE—Bulletin 48A covers electric laboratory furnace for experimental testing, enameling, fusing, igniting, precipitate drying and ashing in physical and chemical laboratories, and for use as pilot furnace in metallurgical laboratories. Temperature range 300 deg. F. to 2000 deg. F. Cooley Electric Mfg. Corp.
- □69. WORK GLOVES—Printed matter lists prices and describes Neox coated work gloves incorporating Neoprene. Maker states they assure at least 25% longer wear and set new standards of safety in handling wet or dry, sharp or abrasive materials, and give full protection against acids, caustics, oils, greases and many solvents. Edmont Manufacturing Co.
- ☐ 70. LIGHTING—Industrial type and Textile mill Slimline fluorescent fixtures are the subject of Bulletin No. 81. Fixtures are for use with two 96" T\$ Slimline lamps. They are complete individual units, with or without end caps, latter being for use as continuous units. Wheeler Reflector Co.
- 71. VALVES—Aloyco flanged gate valves, all around useful valve for corrosive services, and Worthite needle valves are subject of bulletin W-350-B5B issued by Worthington Pump & Machinery Corp.
- ☐ 72. ELECTRONIC DICTATING MACHINE
  —Printed matter describes the new Edison voice-writer, with extraordinary sound or diction control. Hard-to-hear sounds like some "ds" "z's" "th's" and so forth are remarkably clear. The machine uses 7" vinylite plastic disc records (30 minutes of dictation) which are erasable. Special erasing service is available. A companion unit, the Disc Edison Secretarial Instrument, provides great clarity, variable speed control, and will accurately backspace 4 to 10 words at a time. Thomas A. Edison.
- ☐ 73. UNIFORMS—Chart for keeping a permanent record of employees' uniform sizes is offered by the Angelica Jacket Co. Printed on heavy file card stock, it has recording space for 25 employees and will fit into any standard file drawer. Reverse side carries measurement instructions.
- ☐ 74. a-c CONTACTORS
  —Bulletin 44521453 covers new Size 2 and 3 a-c solenoid
  contactors. Ward Leonard Electric Co.
- ☐ 75. PRESSES—All-Hydraulic Presses for Metal Work and Process Industries, are the subject of Bulletin 4804 published by The Hydraulic Press Mfg. Co. The line includes metal drawing presses, forging, forcing, shaft straightening, briquetting, extruding, powder metallurgy, etc.
- ☐ 76. POTENTIOMETERS—ElectroniK potentiometers are the subject of Catalog 15-13 issued by the Brown Instrument Co. Among the instruments and systems included are the ElectroniK strip chart electric control potentiometers, strip chart and circular chart recorders, precision indicators, strip chart and circular chart controllers, indicating controllers, pyrometric switches, thermocouple and radiamatic assemblies, etc.

(Please turn to page 19)

ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE
Three Pages — 12 - 14 - 16
Use convenient prepaid postcards on pages 19 & 20

Automatically Trips Off



SHORT **CIRCUITS** or DANGEROUS **OVERLOADS** Occur!

THERE'S NO WORRY about short circuits or overloads in the plants, stores and offices that are equipped with @ Panelboards made up with @ Thermag Circuit Breakers.

These efficient circuit breakers interrupt any dangerous current by operating automatically and tripping the handle to the "off" position to indicate the circuit in trouble. There's no inter-

> mediate handle position ... nothing to replace... no danger of shock.

> This modern safety and convenience is the result of a thermal-magnetic action that automatically opens the troubled circuit...and as long as the trouble remains, the circuit breaker will continue to trip to the "off" position when any attempt is made to restore service.

Once the cause of trouble has been eliminated, the circuit breaker handle can easily be flipped to the "on" position, restoring the circuit to normal operation.

See your nearest @ Representative for more details (he's listed in Sweet's), or write direct for Bulletin No. 301.

For Automatic CIRCUIT PROTECTION install

(A) PANELBOARDS

with

THERMAG

CIRCUIT BREAKERS

Shockproof and simple to operate, @ Thermag Panelboards can be installed in any size plant, store or office. Capacities: 15 to 50 amps. for 120 volts AC service only; single or double pole; 4 to 42 branch circuits with 3 wire and 4 wire solid neutral mains.



ST. LOUIS 13, MISSOURI

Makers of BUSDUCT . PANELBOARDS . SWITCHBOARDS . SERVICE EQUIPMENT . SAFETY SWITCHES . LOAD CENTERS . QUIKHETER

#### TRY US FIRST -when you need alloy steels THEN you can rely on getting alloy steels manufactured to a Guaranteed Minimum Hardenability; on the prompt filling of your orders; and on additional metallurgical service in the form of a Borhaps J. 8.8 Supply Heat Treatment Guide with each shipment. In this guide, users of U·S·S Carilloy Steels are given specific data on the composition, potential physical properties and recommended heat treatment temperatures to help them obtain the maximum performance from the steel we furnish on their orders. Contact the U·S·S Supply warehouse or sales office nearest you for all your alloy steel requirements. We welcome your inquiries for literature. There's no obligation. TURN IN YOUR SCRAP The more scrap—the more steel United States Steel Supply Company Dept. D-39, 208 S. La Salle St., Caicago 4, Ill. Dept. D-39, 200 S. La Salle St., Chicago 9, 111. Without obligation on my part, please send us free booklets on U-S-S Carilloy Steels. SYMBOL OF SERVICE FOR STEEL USERS

#### UNITED STATES STEEL SUPPLY COMPANY



Warehouses: BALTIMORE · BOSTON · CHICAGO

CLEVELAND · LOS ANGELES · MILWAUKEE · MOLINE, ILL. · NEWARK · PITTSBURGH

PORTLAND, ORE. · SAN FRANCISCO · SEATTLE · ST. LOUIS · TWIN CITY (ST. PAUL)

Also Sales Offices at: KANSAS CITY · PHILADELPHIA · TOLEDO · TULSA · YOUNGSTOWN

Headquarters Offices: 208 S. La Salle St.—Chicago 4, III.

UNITED STATES STEEL

#### A NEW SERVICE for the Busy Purchasing Agent

USE THIS FREE INFORMATION SERVICE TO KEEP YOUR PRODUCT AND SOURCE FILES UP TO DATE

HERE is a wealth of valuable information made available to you through the editorial and advertising pages of this magazine, in the form of new products, trade bulletins, charts, manuals, catalogs, etc.

This information is YOURS FOR THE ASKING. Don't

The Reader Service Department of PURCHASING now offers to buyers a new and simple method of securing the particular information in which they may be interested, with the absolute minimum of effort-

#### ALL INQUIRIES on ONE CARD

Tell us what you want. Let PURCHASING get the information for you.

Here's how it works:

If there are items in the New Products section (pages 150-182) on which you want more information, list them on the Reader Service card on this page, with page number and a simple identification. For example:

Page No. 156

Product or Company Compressor

If, in any of the hundreds of advertisements in this issue, products are featured on which you want more information, and want us to get it for you, indicate your selection on the card, too, with a simple reference. For example:

Page No. 171 309

Product or Company Hoists Cleve. Twist

If there are one or more items in the listing of new catalogs and bulletins (pages 12-16) of interest to you, jot them down on the lower section of the Reader Service Card as follows:

Page No.	Item
12	5
14	- 29

PURCHASING READER SERVICE

These are the items on which I want more information. This card good until May 30, 1949.

Page	Product or Company	Page	Product or Company
		-	
		7 7	
		100	
	- 3		
	1		

Page	Item	Page	Item	Page	Item	Page	Item
					- 1		
					-		

Go the cara. Male it the possess of the information.

quest the manufacturer to mail you the information. SIGN the card. MAIL it (no postage required). PURCHASING will re-Go through this issue with pen in I Let us assume the chore of indiv

Permit No. 16734, Sec. 510, P. L. & R., New York, N. Y.

Class

**BUSINESS REPLY CARD** 

205 EAST 42nd STREET

Reader Service Dept.

#### PARTIAL LIST OF LITERATURE OFFERED BY ADVERTISERS IN THIS ISSUE

Among the numerous catalogs, bulletins, and descriptive literature of value to Purchasing Agents in maintaining their product and source files are the following which are offered by advertisers in this issue.

(See advertisers' index, page 362)

PLUG-IN DUCTS-Bulletin tells about ease of installation to provide power where it is needed. Plug-In Duct replaces conventional panelboards. Square D Company.

FLAT STOCK-Folder describing ground flat stock is accompanied by chart giving formulas for both oil and water hardening. L. S. Starrett Company

PURCHASING DEPARTMENT Records and Routines—That is title of free book with detailed presentation of modern, simplified visible and other purchasing record systems, Systems Division, Remington Rand.

VALVE CHART-OIC cross reference chart helps to eliminate valve change-over prob-Ohio Injector Company. lems.

V-BELTS Veelos, the link V-belt, is detailed in catalog which tells how it provides substantial savings in installation Manheim Manuand maintenance costs. facturing and Belting Co.

LAMINATED PLASTICS—New Textolite laminated plastics bulletin lists grades, properties, fabricating instructions with other detailed information. General Electric Co., Chemical Department.

Class

Permit

No.

16734, Sec.

510, P. L. & R.,

Mow York.

×

BUSINESS

REPLY CARD

WIRE ROPES-82-page book "Know Your Ropes" is full of suggestions on selection, application and usage of wire rope. Wickwire Spencer Steel Divn. of C.F.&I.C.

INDUSTRIAL CRAYONS—Catalog scribes industrial crayons for every kind of surface and every marking or checking purpose. Binney & Smith Co.

FELT SEALS—Data Sheet No. 11 describes "Felt Seals, Their Design and Application," and is accompanied by samples. American Felt Company.

CARTON STITCHER—Booklet describes Acme Silverstitchers as a means for making stronger cartons and cutting assembly time cost 50%. Acme Steel Company.

FASTENINGS—134 page catalog illustrates and gives detailed information about Everlasting Fastenings; 6000 individual items in stock-bolts, nuts, screws, rivets, washers and accessories in brass, bronze, Monel and stainless steels. The H. M. Harper Co.

SPRING STEEL-Current stock lists available on accurate gauge spring steels. High carbon and alloyed strips steels are

supplied in special analyses, rolled in thicknesses from .001", with round edges or square edges in wide range of widths. Sandvik Steel, Inc.

BUSWAY-Circular describes rugged plugin or trolley busway in a 2, 3 or 4 pole construction in one compact housing. LTG Flex-a-Power is rated 50 amps-250 v, a-c or d-c. Permits balanced loads. Trumbull Electric Mig. Co.

MATERIALS HANDLING Printed matter describes giant motorized "wheelbarrow" which can be used as platform truck, or even sturdy snow plow. It handles anything from bricks to flowers. Bell Aircraft Corp.

MAGNESIUM DIE CASTINGS-Pamphlet titled "Doler-Mag" and other technical pamphlets on die casting applications, tell about the advantages offered by magnesium die castings. Doehler-Jarvis Corporation.

NAME PLATES—Free book shows shapes and sizes of nearly 5000 dies on hand. Plates made therefrom save cost of special tools. Etching Company of America.

OFFICE POSTURE CHAIRS-Posture chair booklet tells about advantages of correct seating for increased office efficiency, and Wood Office Furniture Inlists makers. stitute.

LOCKERS, SHELVING, CABINETS-Bulletin tells about line of Steel-Wood Products. Lyon Metal Products, Inc.

OIL STONES—Catalog describes complete packaged oil stone line. Bay State Abrasive Products Co.

These, or any other bulletins, catalogs, etc., offered on the advertising pages of this issue, may be requested through PURCHASING's Reader Service. Simply indicate the page number of the advertisement and the company or product on the Reader Service card below.

3-49

#### PURCHASING READER SERVICE

These are the items on which I want more information. This card good until May 30, 1949.

Page	Product or Company	Page	Product or Company

#### LIST "ASK PURCH" ITEMS BELOW

Page	Item	Page	Item	Page	Item	Page	Item

TITLE

Reader Service Dept.

205 EAST 42nd STREET NEW YORK 17, N.

Will Be Paid

ьу

quest the manuf Go through this i Let us assume t the manufacturer card. the chore issue with MAIL = ō (no pen 9 mail en in postage individual hand. d. One inquiry covers all requests required). **PURCHASING** 

ZONE..... STATE.



I f-ft

11

r-

d. al ir nd n-

te



#### with SQUARE D's PLUG-IN DUCT

Production capability of the modern plant is directly related to arrangement of machinery and equipment. Rearrangement may be necessary to take full advantage of an improved process or to permit economical manufacture of a new product.

PLUG-IN DUCT can be installed with a minimum of delay and expense near ceilings, along walls, or directly above machinery to provide power where it is needed. It replaces the more conventional panelboards, which have conduit-enclosed feeders, typical of less modern installations.

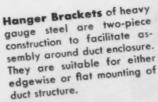
Write for Bulletin 5600. Address Square D Company, 6060 Rivard Street, Detroit 11, Mich. Or call your nearby Square D Field Engineer for help in laying out your duct system.

mechanical strength and resistance to shortcircuit stresses. Supports are non-carbonizing porcelain.



Plug-in Units of either circuit breaker or fusible switch types are

easily installed at 2-foot intervals along both sides of the duct. Plug-in stabs grip the round bus bars with exceptionally high pressure. A hooktype bracket permits rotation of the unit into place. A single clamp screw at bottom holds it there.





Flexible Connectors of laminated copper join bus bars between sections to provide for expansion and contraction, permit proper alignment and insure tight joints. All bolt heads face outward.





MILWAUKEE

LOS ANGELES

SQUARE D COMPANY CANADA LTD., TORONTO . SQUARE D de MEXICO, S. A., MEXICO CITY, D. F.

## unite for this 36 page book



#### Table of Contents

Accomplishments of HF

Physical Properties

Materials of Construction

Types of Construction

Handling

Storage

Sampling and Analysis

Alkylation of Isoparaffins and Olefins

HF as a Condensing Agent

HF as a Fluorinating Agent

This new Harshaw book on Hydrofluoric Acid Anhydrous has been written to provide helpful data for you if you now use HF or are considering its use. We will gladly send you a copy without charge or obligation.

THE HARSHAW CHEMICAL CO.

1945 East 97th Street, Cleveland 6, Ohio BRANCHES IN PRINCIPAL CITIES

## Simple as pincking a rubber tube



CLOSED



A GRINNELL-SAUNDERS DIAPHRAGM VALVE works on a simple principle . . . it pinches tight for positive closure and opens wide for streamlined flow. The working parts of the valve are completely isolated from the fluid . . . no corrosion, no contamination and no leaks. Choice of diaphragm material. Body materials . . . cast iron, malleable iron, bronze, aluminum, stainless steel. Body linings . . . glass, lead, rubber or synthetics.

NO METAL-TO-METAL SEAT ... The large contact area on which this flexible diaphragm seats gives positive closure even when grit, scale or other solid matter is temporarily trapped.

MINIMUM RESISTANCE TO FLOW... Smooth streamlined fluid passage without pockets prevents accumulation of sludge and reduces friction resistance to a minimum.

MAINTENANCE REDUCED...The diaphragm is the only part that normally wears out. Replaced in a few minutes without removing valve from line.

Available in various combinations of valve bodies and operating mechanisms.



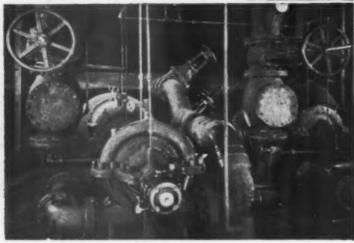


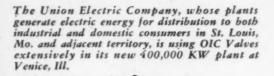
#### GRINNELL

Grinnell Company, Inc., Providence 1, Rhode Island. Branches: Atlanta • Buffalo • Charlotte • Chicago • Cleveland • Cranston • Fresno • Kansas City • Houston Long Beach • Los Angeles • Milwaukee • Minneapolis • New York • Oakland • Philadelphia • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane



MISSISSIPPI MUD"
provides proof





Check These Pace-Setting Features!

- Leak-proof joints guard against disastrous pressuredrop.
- Streamlined designs protect flow from turbulence.
- Heavier construction throughout keeps pressures and stresses within safe bounds.
- Wedges of heavy I-beam design provide positive, leakproof closure, or open the streamlined ports for smooth, even, free flow!
- Integral body ribs guide the wedge to its seats with unerring accuracy — effectively reduce vibration and wear.

WHEN Union Electric built the first unit of their plant at Venice, Ill., OIC Valves—and others—were used in the pump house during the unwatering of the caisson. These valves were continuously subjected to raw Mississippi River water with its high turbidity and consequent severe scouring action.

The OIC Valves came through with flying colors!

When Union Electric needed additional valves, both for temporary use and for permanent installations, OIC Valves were selected.

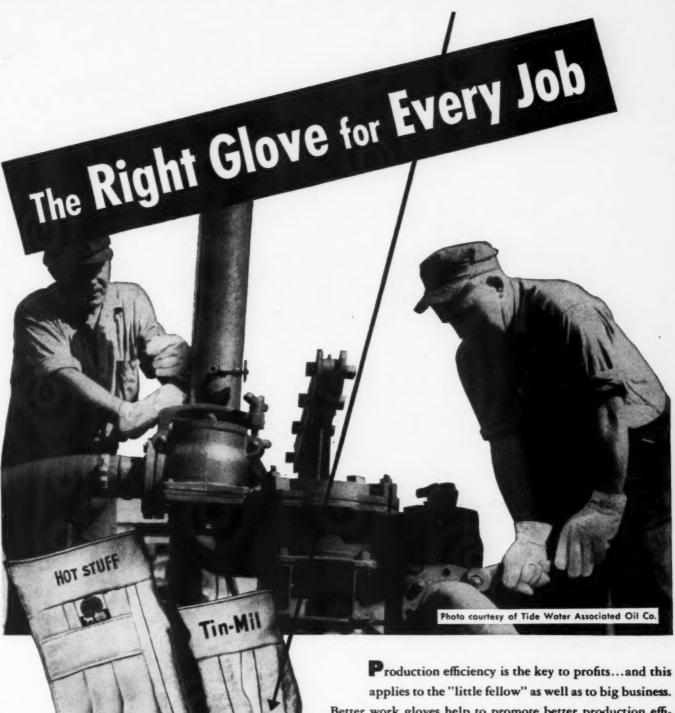
Hundreds of similar experiences show why, day by day, OIC is becoming known as "Pace-Setter in Valves"!



Write For Handy OIC Cross Reference Chart— Eliminates Valve Change-Over Problems

Simply check the number of the valve you wish to replace, look at the chart, and you'll find the right OIC valve.
Write to The Ohio Injector Company, Wadsworth, Ohio, for your free copy.





Better work gloves help to promote better production efficiency, for skilled hands that work in comfort...with full protection...will do a better job.

Riegel Work Gloves are the best you can buy...comfortable, long-wearing and economical...qualities made possible by

> complete Riegel control in one plant, from raw cotton to finished glove. No other work glove

is made in this manner.

WRITE FOR FREE CATALOG and list of distributors, to Riegel Textile Corp., 342 Madison Ave., NY 17, N.Y.

HOT MILL GLOVES-Widely used by oil men, and for protection against heat in steel and tin plate handling. Long wearing. Extra large to slip off easily. Styles 8854 (inseam), 8855 (outseam).

Riegel work gloves

#### INSUROK 84 RICHARDSON

dependable

names in

plastics

**EXPERIENCE** is just one of the factors that make the names of INSUROK and Richardson more significant to manufacturers whose products require laminated or molded plastics. Richardson customers benefit from this experience in many ways.

(1) Richardson experience with a wide variety of plastic materials helps you select the one that accomplishes your purpose most effectively, efficiently and economically.

(2) Richardson experience in the design and production of Laminated INSUROK and Molded INSUROK products has resulted in savings to scores of manufacturers.

(3) Richardson's many proven grades of Laminated INSUROK are available in sheet, rod or tube stock or in fabricated, punched or post-formed component parts for an endless variety of applications.

(4) INSUROK plastic products and Richardson services have played an important part in the development and refinement of many products.

It might be to our mutual advantage to know how these materials and services can work for you.

INSUROK is a registered trade-mark of The Richardson Company

The RICHARDSON COMPANY

GENERAL OFFICES: LOCKLAND. OHIO

FOUNDED IN 1858

Sales Headquarters: MELROSE PARK, ILLINOIS



IMPROVED TURRETLINE FLUORESCENT UNITS

THE UNIQUE, NEW FEATURING B.E.TURRET LAMPHOLDERS

#### An Ideal Heavy-Duty Fixture for **Industrial Lighting Applications**

THIS IMPORTANT ADVANCE in light engineering embodies all the quality refinements of "Skilled Lighting" plus an ingeniously designed lampholder that adds new convenience and protection to fixtures. It is typical of Wheeler "Skilled Lighting" . . . known throughout industry for its sound, lasting developments over a period of 67 years.

The new Turret Line has the famous Wheeler Vitreous Porcelain Enamel finish . . easy to clean and keep clean . . impervious to the elements. It is designed to meet RLM Standards—also for all standard types of suspensions and for individual or continuous runs. Easily accessible starter receptacles built into turret sockets. Sockets enclosed in steel housing for added sturdiness. The new Turret Line units are available for two or three 40-watt lamps.

Investigate this new, improved line before you specify any fluorescent fixture. For complete information, write Wheeler Reflector Co., 275 Congress St., Boston 10, Mass.

Distributed Exclusively Through Electrical Wholesalers



SKILLED LIGHTING



#### CONSTANT SPRING TENSION

You can count on this feature to keep your lamps securely in place. Vibration won't jar them loose or cause poor connections. Yet you can install or remove them with the greatest of ease-and without breaking

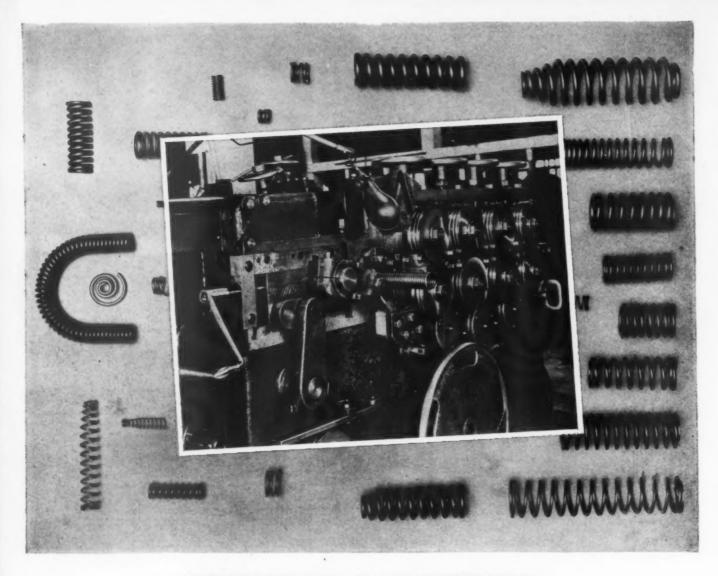
The new lamp holder is ruggedly made to withstand rough handling. It is one of the money-saving, trouble-saving features of the new Wheeler Turret Line.

> RLM SOLID NECK INCANDESCENT REFLECTOR

Maximum lighting efficiency indoors and out. Expertly designed, ruggedly built. Vitreous enamel only. 75 to 1500 watts.

SERIES II, DUST-TIGHT UNITS
... for Class II, "Group G & F" and
Class III and IV hazardous locations. Hinged, gasketed cover. Supplied with Thick Sheet Glass, Water-White Plate Glass, or Tempered-Clear Safety Plate Glass.

SPECIALISTS LIGHTING **EQUIPMENT SINCE 1881** 



#### SPRINGS A-POPPIN'

VERY DAY you'll find hundreds of thousands of Wickwire springs popping from scores of machines like these. They may be straight, tapered, cone-shaped; tiny enough for a cigarette lighter or big enough for an overhead garage door.

Operating these automatic coiling machines is no "feed-and-let-run" proposition. Meeting spring specifications calls for correct design, skillful toolmaking and precise adjustment of tools, cams and operating speeds. It takes experience to develop such skill . . . and many of Wickwire's spring specialists have been doing it for over 25 years. During this time they have engineered well over 50,000 different spring designs.

Our engineers are at your service in designing any conceivable type of wire spring or wire form. Why not write us? Also, let us send you our free book, "Springs and Formed Wires." It's full of valuable engineering data about spring selection and performance. Just address your request to Spring Dept., The Wickwire Spencer Steel Division of C. F. & I., 2 New Bond St., Worcester 6, Mass.



#### **WICKWIRE SPENCER SPRINGS**

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION . THE COLORADO FUEL AND IRON CORPORATION

SPRING SALES OFFICE & PLANT—2 New Bond St., Worcester 6, Mass. • EXECUTIVE OFFICE—500 Fifth Ave., N.Y. 18, N.Y. SALES OFFICES—Boston•Buffalo•Chicago•Denver•NewYork•PACIFIC COAST—The California Wire Cloth Corp., Oakland 6, Cal.

Other quality Wickwire Spencer Products include: Wire, Wire Rope, Metal Conveyor Belts, Chain Link Fence, Industrial Wire Cloth, Poultry Netting, Hardware Cloth, Insect Wire Screening, Welded Wire Fabric for concrete reinforcement.



# Industry setting new standards of accuracy with new TIMKEN Double-Zero bearings!

UNTIL recently, the most accurate Timken® bearing on the market has been the "Zero" bearing, with a maximum run-out of only 150 millionths of an inch. Then, just a few short months ago, The Timken Roller Bearing Company introduced the "Double-Zero" bearing, with a maximum run-out of 75 millionths of an inch—twice as accurate as the Timken "Zero" bearing!

Within the short time since, one industry after another has begun to take advantage of the increased accuracy of the new "Double-Zero" bearing by applying it on grinding machine spindles, small precision rolling mills, gear cutters, lathe spindles, and many other applications where extreme accuracy is essential.

#### "DOUBLE-ZERO" BEARING IS A "GENERATED UNIT ASSEMBLY"

To achieve the extreme accuracy of the "Double-Zero" bearing, Timken engineers built specialized

machine tools, developed measuring devices of extreme accuracy, and perfected new manufacturing processes.

Then, to assure positive roll alignment, long lasting precision, permanent adjustment, and smoother operation, the "Double-Zero" bearing goes through an extra step in manufacture. A natural and true geometric contact is generated between all rotating parts, which results in a "Generated Unit Assembly".

The new "Double-Zero" bearing is the latest example of Timken leadership in serving the bearing needs of all industry. Whenever you buy bearings, it pays to look for the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.

A PRECISION TIMKEN BEARING FOR EVERY REQUIREMENT					
CLASS	"OO" (DOUBLE-ZERO)	"O" (ZERO)	"3" (THREE)		
RUN-OUT	.000075"	.000150"	.000300"		
TYPES AVAILABLE	Standard Single Row Standard Single Row		All types		
SIZE RANGE	Up to 10" O.D.	Up to 12" O.D.	Up to 12" O.D.		

#### TIMKEN

#### TAPERED ROLLER BEARINGS



MOT JUST A BALL O NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL D AND THRUST - 0 - LOADS OR ANY COMBINATION



ELIMINATE MACHINE READJUSTMENTS

OFF WITH THE OLD
ON WITH THE NEW
ON WITH THE NEW
and Start Grinding!

NORTON 32A60 JEVBE

NORTON

918 8000 0°O

Abrasives - Grinding Wheels - Grinding and Lapping Machines - Refractories - Porous Mediums - Non-slip Floors - Norbide Products - Labeling Machines

## Increase Production with these new precise NORTON Internal GRINDING WHEELS

BECAUSE internal grinding wheels are small, they wear out quickly. Thus wheel changes are frequent and any reduction in wheel-change time can materially increase production. That's why the new Norton "precision-made" internal grinding wheels are so popular.

The grinding action of these new wheels is so uniform—not only in each lot but from lot to lot as well—that there's no lost time for machine readjustments when wheels are changed. The operator just slips off the worn wheel, snaps on a new one, starts grinding—no fussing with feeds and speeds. He gets just the same grinding action that he had a few seconds before, or the day before, or the week before.

Produced by a radically new, Norton-developed manufacturing process, these wheels have a uniformity in dimensions and in grinding action far ahead of anything previously obtainable in a ceramic product.

#### Available with All Norton Abrasives

The advantages of this new NORTON manufacturing process are available with all Norton abrasives—ALUNDUM\*, the sensational 32 ALUNDUM\*, 38 ALUNDUM\*, 57 ALUNDUM\*, 37 CRYSTOLON\* and 39 CRYSTOLON\* abrasives.

#### Faster Service, Too

The new Norton manufacturing process with its electric kilns produces these improved internal grinding wheels in hours instead of days. This means improved delivery.

If you are not already cutting internal grinding costs with these new Norton wheels it will pay you to try them. See your Norton abrasive engineer or Norton distributor.

\*Trade Mark Reg. U. S. Pat Off.

W-1227

Norton manufacturing process are disclose limits.

#### Precise Balan

cision burning, precise balance is inherwith and it stays there as the war down.

#### Grinding Action

cess have brought a new uniform ity to grinding action throughout the wheel to wheel and from the troughout the same to wheel to wheel and from the troughout the same to wheel to wheel and from the troughout the same troug

NORTON COMPANY, WORCESTER S, MASS. . Warehouses in Five Cities . Distributors in All Principal Cities

## The little of the salidity

# "We Were Able To Increase The Load On A Bus Duct Without Changing Fuse Holders"

"In May, 1945, we moved considerable electrical equipment from a plant in Buffalo to a new plant at Niagara Falls. Several runs of bus duct were moved and installed with some load added.

"The fusible swing-out plugs in the bus duct system were 60 ampere capacity. It was soon found that 60 ampere ordinary fuses would not handle the starting surges or other temporary overloads caused by the additional equipment on the circuit.

"Our Electrical Engineer suggested Fusetron dual-element fuses. The troublesome, needless blows were stopped immediately.

"The Fusetron fuses permitted all machines to be kept in operation without any change in the size of the fuse holders."

> Ferguson Electric Construction Co., Buffalo, N. Y. C. P. Wachtel, Vice President



#### Facts About FUSETRON Dual-Element FUSES

The fuse link element opens on short-circuit — the thermal cutout element protects on overloads — the result, a fuse with tremendous time-lag and much less electrical resistance.

They have the same degree of Underwriters' Laboratories approval for both motor-running and circuit protection as the most expensive devices made.



Made to the same dimensions as ordinary fuses — fit all standard fuse holders.

Obtainable in all sizes from 1/10 to 600 ampere, both 250 and 600 volt types. Also in plug types for 125 volt circuits.

Their cost is surprisingly

FUSETRON is a trade mark of the Bussmann Mfg. Co., Division of McGraw Electric Co.

## Fusetrones-Fuses

with their

### 10 Point Protection

- Protect against short-circuits.
- 2 Protect against needless blows caused by harmless overloads.
- Protect against needless blows caused by excessive heating lesser resistance results in cooler operation.
- Provide thermal protection for panels and switches against damage from heating due to poor contact.
- **5** Protect motors against burnout from overloading.

- 6 Protect motors against burnout due to single phasing.
- Give DOUBLE burnout protection to large motors without extra cost.
- 8 Make protection of small motors simple and inexpensive.
- Protect against waste of space and money — permit use of proper size switches and panels.
- Protect coils, transformers and solenoids against burnout.

Stop Wasting Time and Money -

FUSETRON Dual-Element Fuses Give ALL-PURPOSE PROTECTION

BUSS

One needless shutdown — or one lost motor — or one destroyed switch or panel — may cost you far more than replacing every ordinary fuse with a FUSETRON Dual-Element fuse.

Don't risk such losses — protect yourself by installing a FUSETRON Dual-Element fuse in every set of fuse clips throughout the entire electrical system. Bussmann Mfg. Co., University at Jefferson St. Louis 7, Mo. (Division McGraw Electric Co.)

Please send me complete facts about Fusetron Dual-Element Fuses.

Name\_\_\_\_\_\_Title\_\_\_\_\_

Company\_\_\_\_\_

City & Zone State 349

## Announcing



GENERAL &



ELECTRIC

He of ( star fas eas can

### a complete NEW line



#### MOTOR STARTERS

Strongbox Magnet Coil

Here it is—a completely new line of G-E motor starters—full-voltage starters made for extra-long life, faster installation. Designed for easy maintenance, but built so you can forget them.

NEMA Sizes 0, 1, 2, and 3—each size new all the way through. Everything's new—contacts, arc hood, magnet, armature, and the tough Strongbox magnet coil. Get your first G-E starter and compare!





General Electric Company Apparatus Dept. Sec. AC676-277 Schenectady 5, N. Y.

Please send me your bulletins desc

GEA-5153 (CR7006 A-c Magnetic

GEA-5156 (CR7008 A-c Combination

Name.

Company\_

Address.



#### JMLcoF-18

#### WHY Federated SOLDER?



Solders are all alike, you say? You're right! Basically, they are all alloys of tin and lead. BUT...

Tin and lead tossed together casually like coffee and cream do not consistently result in

good solder. The alloying must be done scientifically, under controlled conditions, so that the solder you use melts uniformly at the same temperature . . . flows evenly . . . bonds permanently.

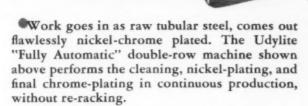
All Federated solders are manufactured under the strictest laboratory and production line controls. See Federated first for solders of all sizes and compositions—rosin core, acid core and solid wire solders; bar solders; body solders; pig, drop, foil, ingot, triangle, strip, wiping and segment solders.

Federated also produces brass and bronze ingot metals, die casting alloys, bearing metals, aluminum and magnesium alloys, zinc dust and fabricated lead products. 24 sales offices across the nation.



Division of American Smelting and Refining Company, 120 Broadway, New York 5, N.Y.





Two S-frame chairs are mounted on each rack, with 2 racks per carrier. Work carriers move at a rate of 45 per hour, turning out 180 S-frame chairs per hour, or 720 hairpin legs per hour. Production of single legs is 1,440 per hour.

Here is the answer to your quest for greater output, lower manufacturing costs, and better utilization of manpower. Write today for further information—describe your product and process—and we will promptly supply detailed recommendations, without cost or obligation to you. The Udylite Corporation, Detroit 11, Michigan.

PIONEER OF A BETTER WAY IN PLATING





TESTED SOLUTIONS . TAILORED EQUIPMENT . AUTOMATIC CONTROL IN METAL FINISHING

# Spring Worries?

Our Factory-Trained Field Men Are Near You...



When your spring procurement problems indicate the need of a specialist at your elbow, send out a call for one of our 38 trained men constantly in circulation in the industrial field. With coverage like this, you will get prompt if not immediate action.

This is one of the many good reasons why it pays to do business with this alert group of seven spring plants.

SPRINGS SMALL STAMPINGS WIRE FORMS

ORIGINAL DIVISIONS OF ASSOCIATED SPRING CORPORATION

NALLACE BRISTOL

MAILLIW D.GIBSON CONNECTICUT

1800 CLYBOURN AVE CHICAGO 14

RAYMOND Manufacturing COMPANY

CORRY, PENNSYLVANIA

BARNES GIBSON

6400 MILLER RIVE DETROIT VI and ANN ARBOR, MICH

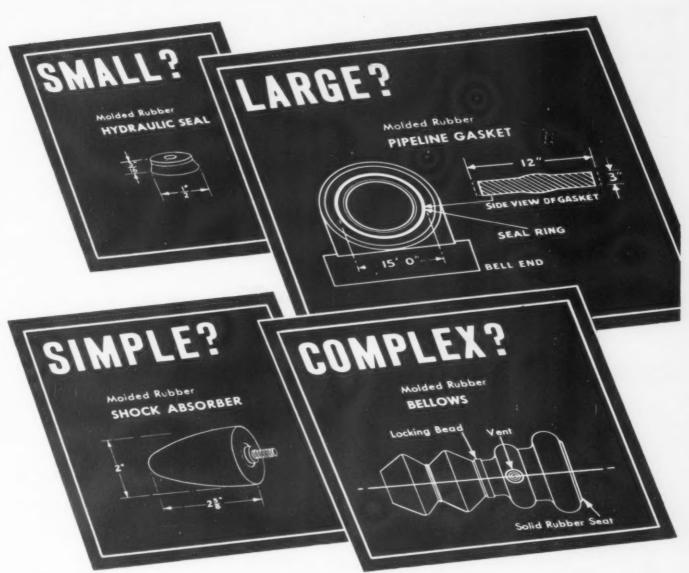
THE BEST

FOR MECHANICAL

.... AND DUNBAR BROTHERS COMPANY DIVISION, BRISTOL, CONN.

OHIO DIVISION, 1712 EAST FIRST STREET, DAYTON, OHIO

IN CANADA, THE WALLACE BARNES CO., LTD., HAMILTON, ONT.



# Precision-Molded Rubber Parts on a Mass-Production Basis

FROM a midget to a mammoth, Goodyear can mold rubber parts to extremely close tolerances—with accuracy impossible in former methods, coupled with the economies of mass production.

High-speed multiple-cavity machines—acknowledged Goodyear leadership in natural rubber—25 years plus of experience in synthetics—ALL help the G.T.M.—Goodyear Technical Man—to

meet your needs for fast delivery of volume-with-precision supplies of molded rubber parts.

Send your specifications to the G.T.M., c/o Goodyear, Molded Goods Dept., St. Marys, Ohio.



THE GREATEST NAME IN RUBBER



Welcome the man who presents this card. He's ready and anxious to help you increase consumer good will by protecting your product against the hazards of shipping—and to help you increase sales through better packaging.

GAYLORD CONTAINER CORPORATION
General Offices: SAINT LOUIS

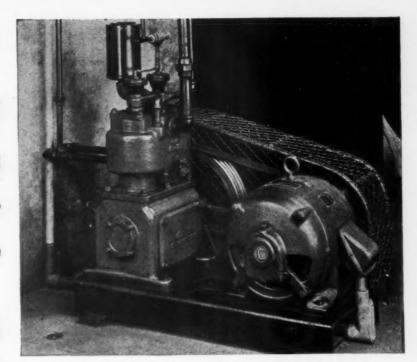
Corrugated and Solid Fibre Boxes . Folding Cartons . Kraft Grocery Bags and Sacks . Kraft Paper and Specialties

196

Curtis Timken Bearing Air Compressor. Sizes from 1/4 to 50 H. P., inclusive.

## RELIABILITY That Pays Off in Low-Cost Performance

# CURTIS



## AIR COMPRESSORS

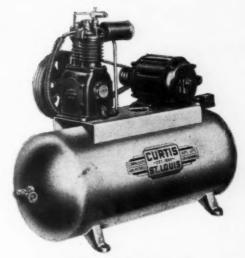
WHATEVER the application, in thousands of varied industrial installations, Curtis Timken Bearing Equipped Air Compressors have a long and proven record of extreme reliability, low maintenance expense and unusually long life.

Every Curtis Air Compressor has been carefully engineered, made of the highest quality materials and precision built throughout.

Their dependable, economical performance is the result of such design advantages as:

- Timken Roller Bearings
- Self-Oiling—Positive Lubrication
- Carbon-Free Disc Valves
- Automatic Pressure Unloader
- Fully Enclosed Design
- Precision Construction

Specify CURTIS when you want a reliable, low-cost supply of air for any use. Capacities from 1/4 to 50 H.P. (up to 300 CFM).



Curtis Timken Bearing Air Compressor with tank. Sizes from 1/4 to 10 H.P., inclusive.

Write today for full information on Curtis Air Compressors, Air Hoists and Air Cylindersor mail the coupon below.

I-48-1

PNEUMATIC MACHINERY DIVISION C-7 on Curtis Air Hoists, Air Cylinders and Curtis Air Cylinders and Curtis Air

1908 Kienlen Avenue - St. Louis 20, Missouri

95 Years of Precision Manufacturing

CURTIS	PNEUMAT	IC MACHINER	Y DIVISION	of Curtis	Manufacturing	Сетралу

1908 Kienlen Avenue, St. Louis 20, Missouri Name... Please send me Form

Compressors.

Firm.

City.

## Take a

WALWORTH No. 225P

**Bronze Valve** 

Apart...

COMPARE IT PIECE BY PIECE

It will pay you to look inside the Walworth No. 225P. Compare the improved design, construction and convenience features shown in the "exploded" view. Notice the husky bronze body, the removable seat and disc, the oversize stem, all assuring maximum protection against wear and leakage.

Further, No. 225P is the TOUGHEST bronze valve your money can buy. The stainless steel, non-corrosive seats and discs are heat treated to a hardness of 500 Brinell — hard enough to scratch glass and crush nails. For this reason, the valve can be closed on sand, slag, scale and similar flotage without injury to the seating surfaces, and "wire drawing" is practically eliminated. Thus years of tight, positive shut-off are assured.

Available in both globe and angle types (angle type: No. 227P) in sizes 1/4" to 2", this quality valve is recommended for 350 lbs. W.S.P. at 550 F, and 1000 lbs. non-shock service on cold water, oil, gas or air.

For full data on this long-life, economical Walworth Bronze Valve, see your local Walworth distributor, or write for Circular 82.

## WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

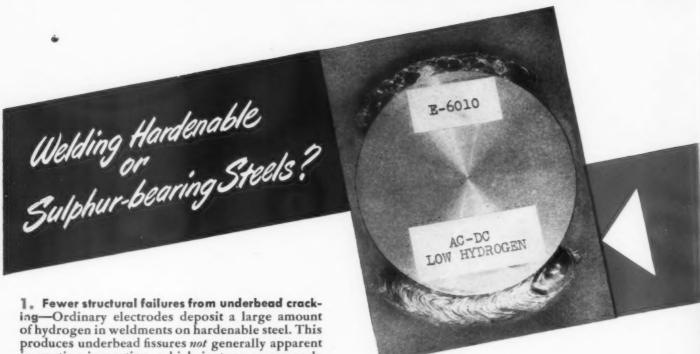
We would like to put this new catalog in your hands! Catalog 2 Now you can buy Bay State oil stones! The same top quality that has made other Bay State abrasive products famous throughout the world is now available in a complete packaged oil stone line.

#### BAY STATE ABRASIVE PRODUCTS CO., WESTBORO, MASS., U. S. A.

Branch Offices & Warehouses, Chicago, Cleveland, Detroit. Distributors, All Principal Cities

Send coupon today for this practical handbook, complete with list price and discount data.

	To Bay State Abrasive Products Co., Westboro, Mass.  Please send your new oil stone catalog immediately.
BAY	Company
STATE	City State
70	p Performance Consistently Duplicate



1. Fewer structural failures from underbead cracking—Ordinary electrodes deposit a large amount of hydrogen in weldments on hardenable steel. This produces underbead fissures not generally apparent in routine inspection, which in turn causes early structural failures in service. General Electric lowbydrogen rods have a special coating which materially reduces the amount of hydrogen deposited, thereby largely eliminating the basic cause for such failures.

2. Better mechanical properties—Laboratory comparisons between these low-hydrogen electrodes and class E6010 electrodes show the former to possess higher tensile and yield strength, better elongation, and higher impact at both room and sub-zero temperatures.

3. Welds can be successfully enameled without heat treatment—as has been actively demonstrated on both a laboratory and production basis.

4. Materially improved operating characteristics—G-E low-hydrogen electrodes are extremely flexible in application, with either a-c or reverse polarity d-c; spatter is minimized, deposition efficiency is high, penetration is adequate but not excessive.

There is little or no tendency for surface holes to occur in metals of relatively high sulphur content—and in all cases the finished weld offers an excellent appearance. (Note lower bead in photo above.)

#### THESE ARE THE G-E "LOW-HY FAMILY"

W-32 is the "father" of the line, having been offered since 1945. A new, greatly improved version was recently introduced—and this performance-proved electrode is now listed at a new, attractive price.

W-60, W-61, W-62 are three brand new additions, with recommended applications as follows:

W-60—For welding hardenable steels where hazards of underbead cracking are to be eliminated.

W-61—For a wide variety of low-alloy, "hightensile" steels.

W-62—For use on steel castings and for producing weld deposits having high impact properties at subzero temperatures.

#### AND THESE OTHER G-E ELECTRODES CAN DO AS MUCH FOR OTHER WELDING JOBS

Mild-Steel and General-Purpose Electrodes—This group of 9 types is headed by W-28, a new general-purpose, all-position rod with an unusually stable arc that produces welds of superior appearance, at high speeds, with minimum convexity. Other electrodes in this group are available specifically for horizontal, vertical, or over-head welding, etc. Stainless Steel Electrodes—27 types (16 for d-c, and 11 for a-c or d-c) make this one of the most complete stainless lines available. Each type is keyed to specific AISI code numbers for easy selection. Special, double-carton packaging protects

the rod against moisture as well as providing extra protection against transit and storage damage.

Cast-Iron, Hard-Surfacing, & Phosphor-Bronze Electrodes—Herein are some of the more recent additions to the G-E electrode line; W-2075 for making machinable welds on cast-iron; W-94 for abrasion-resistant, hard-surfacing applications; and W-70 for phosphor-bronze welding. They are exemplary of G. E.'s welding laboratories' constant search for better electrodes, improved equipment, and more efficient welding processes.

# HERE'S WHY G-E LOW-HYDROGEN ELECTRODES WILL MEAN MONEY IN YOUR POCKET

# HERE'S WHAT USERS FIND WITH G-E ''LOW-HY'' ELECTRODES

Production had virtually stopped at a Pennsylvania machinery manufacturer's plant because cracks were developing in weldfabricated steel parts. A rush shipment of W-32 from our Philadelphia distributor eliminated the cracking and had them back in production the same afternoon.

Arc welding in general and W-32 electrode in particular played an important part in fabricating this ram or slide for a 200-ton, straight-side crank press. Welded construction with W-32 was used extensively throughout the entire press.

A mid-western transformer manufacturer now swears by W-32 after finding that it completely eliminated a severe cracking and porosity problem in the fabrication of transformer tanks.

You can order these low-hydrogen electrodes from your G-E Arc-welding Distributor today. And ask him for your copy of the new pocket-sized electrode catalog, GES-3571. Apparatus Department, General Electric Company, Schenectady 5, N. Y.



"A-C or D-C ...

there's G-E Arc-welding Equipment for Every Application!"

ARC WELDERS . ELECTRODES . ACCESSORIES

GENERAL (%) ELECTR





Faster. Blue Ribbon superstandard gummed tape speeds up your package sealing. It moistens instantly. One firm sweep of the hand puts it down to stay. Blue Ribbon is supple-ized\* to make it flexible, easier and faster to apply.

**Stronger.** Your packages reach their destinations in good condition when you use Blue Ribbon tape. Blue Ribbon's fast-acting adhesive grips your container with a strong weather-resistant bond. The tough long fiber kraft adds further protection to your merchandise.

Better in every way. You will find this new superstandard golden-brown gummed tape the answer to your sealing problems. Its 18 advantages combine to give you safer, stronger, neater packages.

\* Trade Mark





Sticks tight quickly



Far easier to apply



Stronger protection



Packaged in cartons



Moistureproof liner



Controlled uniformity

## Million of the state of the sta

Send now

for your free copy of this help-

ful booklet "How to speed up

sealing in your shipping room" and the name of your nearest

Blue Ribbon distributor. No

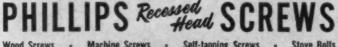
obligation.



# Blue Ribbone\* superstandard gummed tape

HUDSON PULP & PAPER CORP., DEPT. C-3, 220 EAST 42ND STREET, NEW YORK 17, N. Y.



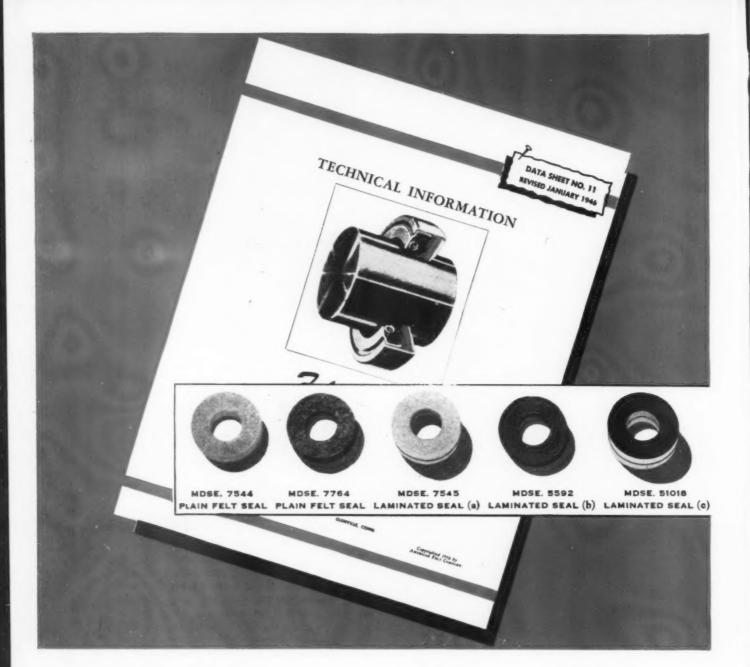


American Screw Co.
Camcar Products Co.
Central Screw Co.
Continental Screw Co.
Corbin Screw Div. of
American Hdwe. Corp.
Eleo Tool 4. Screw Corp.
The N. M. Harper Co.
Lamson & Sessions Co.
Milford Rivot and Machine
National Lock Co.

National Screw & Mfe. Co. New England Strew Co. Parker-Kalen Corporation Pawtucket Screw Co. Pheoli Manufacturing Co. Reading Serew Co.
Reckford Screw Products Co.

Russell Burdsall & Ward Russell Burdsall & Ward Bolt & Nut Co. Scavill Manufacturing Co. Scabbeard Screw Corp. Shakoproof inc. The Suthington Hardware Mfg. Co. The Steel Company of Canada, Ltd. Sterling Bolt Co. Stronghold Screw Products, Inc. Wales-Beech Corp. Welverine Bolt Company

Phillips Screw Mirs .. co Horton Noyes Co. ramps screw mass, cie norten noves ce. R. I.
1800 Industrial Trust Blds., Providence, R. I. Send me the new booklet ... How to Select Recent Head Screws for Practical Production Driving". Company . . . . . . Address



## Felt Seals can work 3 ways for you

Here are the three mechanical sealing functions performed by felt seals: (1) they store lubricants within themselves and hence lubricate bearings and shafts; (2) they retain lubricants, including pressurized, within housings, and (3) they exclude dust, dirt, water and other substances, giving effective protection against equipment failures due to leakage or impurities. There are many types of felt seals, both plain and laminated, to meet a wide range of conditions. For illustrative samples and complete technical information, write for Data Sheet No. 11, "Felt Seals, Their Design and Application"—an authoritative reference on this important subject. And when ordering felt for seals or other uses, be sure it is American Felt.



GENERAL OFFICES: GLENVILLE, CONN.

Engineering and Research Laboratories: Glenville, Conn. PLANTS: Glenville, Conn.; Franklin, Mass.; Newburgh, N. Y.; Detroit, Mich.; Westerly, R. I. SALES OFFICES: New York, Boston, Chicago, Detroit, Cleveland, Rochester, Philadelphia, St. Louis, Atlanta, Dallas, San Francisco, Los 'Angeles, Portland, Seattle, Montreal.

Bucket holds 10 cubic feet . . . 18 with sideboards



Mechanically dumped . . . operates by foot pedal



9-square-foot steel platform takes half-ton loads



Climbs 20% grades fully loaded



50-inch steel blade makes Prime Mover an efficient snow plow

#### FEATURES:

- gear driven . . . no belts or chains
- fully enclosed engine protected against dirt and moisture
- clutch, engine, transmission all run in oil
- switch from bucket to platform without tools . . . in less than a minute
- turns in its own length (63½"); width 31½"
- 3-gallon tankful of fuel gives
   8 hours continuous service

A PRODUCT OF

BELL Aircraft

CORPORATION

\*Patents & T. M. Reg. Pending Copyright, 1949

#### From bricks to gears, fertilizer to flowers

# The BELL Frime Mover

# speeds production, saves manpower, cuts costs

Here are a few reports from industries now profitably utilizing the clear-cut advantages of the Bell Prime Mover ... a machine combining the features of a giant motorized "wheelbarrow," a 9- or 14-square-foot platform truck of unusual mobility, and a sturdy, low-cost snow plow.

Georgia Vitrified Brick & Clay Co.: Reports savings of 40 man-hours a week, carting material from borrow bed.

**Lima-Hamilton Corp.:** "In hauling shavings and turnings, the Prime Mover is making 4-5 trips more per hour than one man with an ordinary wheelbarrow," writes John S. Dixon, assistant to the vice president.

Knoxville Fertilizer Company: Here a Prime Mover saves 8 man-hours daily transporting bagged fertilizer from mill to box cars and trucks.

Reading Greenhouses, Inc.: General Manager Harold Christensen writes about two Prime Movers used for changing soil in greenhouses: "They have practically revolutionized this laborious job. We have done away with our usual 8-man wheelbarrow brigade and now do the job with only two operators in just a portion of the time... we wonder how we got along before without them."



This quick round-up of Prime Mover success stories can have important implications in your business... for there are certain to be one or more operations in your own plant that can be done with Prime Movers... faster, with less manpower, at lower cost. Such jobs could include coal passing, ash removal, snow plowing, movement of bulk raw materials.

An on-the-job demonstration will quickly support this thinking. If you would like to see a Prime Mover or a fleet of them in action, a member of our nationwide sales and service organization will gladly arrange a demonstration. For more information, please sign this coupon, clip it to your letterhead, and mail it to us.

#### SEND COUPON NOW

Bell Aircraft Corporation P. O. Box 1P3, Buffalo 5, N. Y.

Please send facts on the Bell Prime Mover. Who is the nearest distributor?

Name					 	 *****			
Compe									
Addre	SS				 *****	 	****	***	
City. 2	Zon	8	State	0					

## You Can COUNT on Veeder-Root

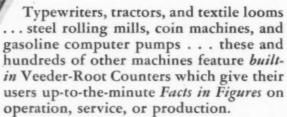


**Gasoline Pump Computer** ("Head for Figures") computes exact price of gascline pumped into your tank.



New 1260 General-Purpose Counter, compact, streamlined, easy to build into any product.

### ... at any point ... in any business or industry



And these same Facts in Figures . . . delivered in terms of turns, strokes, pieces, trips, hours, volumes, lengths, lightflashes, hand-movements, or what have you? . . . are the bedrock basis of moneysaving, vigilant Veeder-Root Countrol.

See that all new machines and equipment you buy are equipped to give you Veeder-Root Countrol. And see how your own products can build up sales by building-in a Veeder-Root Counting Device. Write.



New 1268 Non-Reset Magnetic Counter for coin ma-



2-3 Pick Counter, for textile looms counts picks (shuttle-flights). Counter is convertible from 2 to 3 shifts.



HOURS

New 1248 Reset Magnetic

Counter for remote indica-

tion of machine production. from plant to office.

fractors shows elapsed length of service and when overhaul time is coming



Cut Meter for textile looms permits production of uniform lengths of cloth without "cut marks." Cut Meter knocks-off loom when predetermined length has been woven.

Direct-Reading Counter indicates thickness of steel sheets passing through rolling mill.

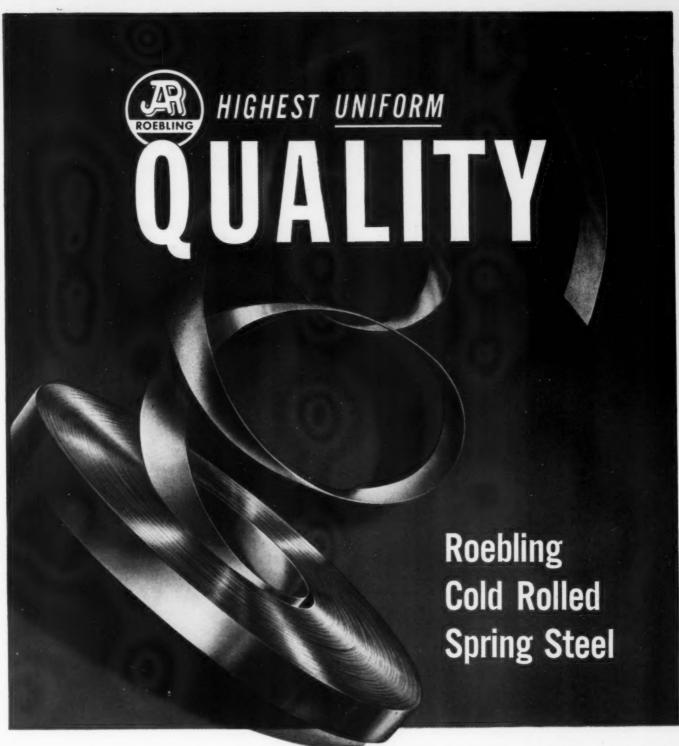


Veeder-Roof

VEEDER-ROOT INC.

Hartford 2, Conn.

In Canada: Veeder-Root of Canada, Ltd., 955 St. James Street, Montreal 3 In Great Britain: Veeder-Root Ltd., Kilspindie Rd., Dundee, Scotland



#### EVERY INCH IDENTICAL IN GAUGE, GRAIN, FINISH

PRODUCTION SCHEDULES don't go out of kilter...you cut down stoppages and rejects when you use Roebling Cold Rolled Spring Steel! For this is a typically Roebling product... uniform in physical properties and structure; dimensionally accurate; faith-

ful to the most exacting specifications.

With higher than 0.25% carbon content, Roebling Cold Rolled Spring Steel can be furnished annealed and hard rolled untempered in bright finish. In the higher carbons in this range, it can be furnished tempered, in scaleless

tempered; tempered and polished; tempered, polished and strawed; or tempered, polished and blued.

Your Roebling Field Man will be glad to help you select the cold rolled spring steel; round, flat or shaped wire for genuinely superior service and utmost economy in your own products. John A. Roebling's Sons Company, Trenton 2, New Jersey.

- WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST — ROEBLING OFFICE AND WAREHOUSE

Atlanta, 934 Avon Ave. \* Boston, 51 Sleeper St. \* Chicago, 5525 W. Roosevelt Rd. \* Cleveland, 701 St. Clair Ave., N. E. \* Denver, 1635 17th St. \* Houston, 6216 Navigation Blvd. \* Los Angeles, 216 S. Alameda St. \* New York, 19 Rector St. \* Philadelphia, 12 S. 12th St. \* Pittsburgh, 855 W. North Ave. \* Portland, Ore., 1032 N. W. 14th Ave. \* San Francisco, 1740 17th St. \* Seattle, 900 First Ave.

ROEBLING

A CENTURY OF CONFIDENCE A

"Me . . . stock all those endless V-Belt sizes?"



# "Not since I use VEELOS"

"I can replace any V-belt in our plant with just these reels of Veelos."

That's a typical Veelos user telling you how Veelos cuts V-belt inventory. If you use O, A, B and C widths, four reels of Veelos give you a choice of more than 316 sizes. Use only A and B? Then two reels are all you need.

Buying matched sets of endless V-belts is costly. Forget it with Veelos. Forget, too, belt deterioration and obsolescence. Veelos on reels saves storage space... simplifies stock records.



Veelos is quickly and easily installed. On drives with fixed centers or outboard bearings, Veelos is installed without moving the motor or dismantling the machine. It provides substantial savings in installation and maintenance costs.



SEND FOR FREE VEELOS CATALOG. It shows how you can benefit from the many important advantages of Veelos. Fully illustrated. Complete engineering data. Write for it.

MANHEIM MANUFACTURING & BELTING COMPANY
MANHEIM, PA.



#### ADJUSTABLE TO ANY LENGTH . ADAPTABLE TO ANY DRIVE

Made in all standard sizes, fits all standard grooves. Packaged on reels in 100-foot lengths. Sales engineers in principal cities; over 300 distributors throughout the country. Veelos is known as VEELINK outside the United States.

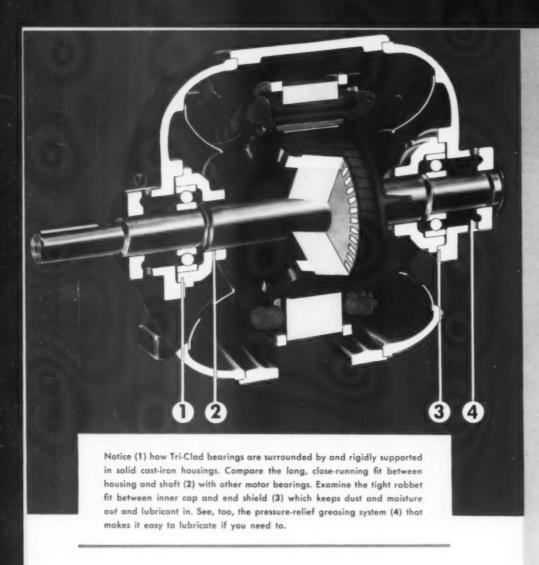
YOU CAN'T BEAT A

TRICLAD MOTOR FOR

EASY MAINTENANCE

GENERAL B ELECTRIC

HERE'S



# You can't beat a TRICLAD motor for easy maintenance

A TRI-CLAD MOTOR will run safely without lubrication for years—for as long as any other general-purpose motor you can buy. The big thing is—it's grease-gun easy to lubricate a Tri-Clad if you need to.

You don't have to take a Tri-Clad motor down and disassemble the bearings to lubricate it. You don't have to follow special instructions. A standard gun and a good grease are all you need.

And remember, Tri-Clad gives you all the extra protection that only cast-iron structure can give . . . Extra protection against rust and corrosion . . . Extra protection against mechanical abuse and permanent distortion . . .

Extra protection that has been proved in more than 5 billion hours of rough-and-tumble industrial service.

WANT TO SEE FOR YOURSELF? Tri-Clad motors in nearly all types and ratings are ready for IMMEDIATE SHIPMENT. Contact your nearest G-E Office or write Apparatus Dept., General Electric Company, Schenectady 5, N. Y.



## There's a Tri-Clad motor for every industrial need!



G-E open (dripproof) induction motors for constant-load, constantspeed applications. From 1 to 2000 hp.



G-E totally enclosed motors for operation where dust or corrosive fumes are a hazard. From 1 to 1000 hp.



G-E capacitor motors for use on fans, blowers, pumps and compressors with single-phase power. From ¾ to 5 hp.



G-E Type ACA induction motors for adjustable speeds—provide 3 to 1 speed range. From 3 to 200 hp.

TRI CLAD

EXTRA PROTECTION



Yes, workers' hands are more precious to industry than all the rare china in the universe. Production efficiency and profits hinge on their healthy condition. Unfortunately, like china, these hands are readily vulnerable to damage . . . the skin must be protected against the dangerous effects of specific industrial and chemical irritants in every plant.

To combat this "dermatitis danger," West offers a form of hand protection to fit every need.

#### -WEST LAN-O-KLEEN HAND CLEANER

A gentle-acting powdered preparation made of fine corn-meal granules—with LANOLIN added for protection against loss of natural skin oils. Removes grease, dirt and grime quickly, safely and thoroughly. Contains no harsh ingredients or excess alkali — the perfect safeguard against damage-causing irritants.

#### -WEST SULPHO LIQUID HAND CLEANER

Formulated of sulphonated vegetable oil, with an ideally neutral pH. Sulpho is especially designed not to defat the skin of workers whose hands are constantly exposed to solvents, paint thinners, degreasing agents and other defatting materials.

#### -WEST PROTECTIVE CREAMS

A specific scientific formula to combat practically every type of industrial dermatitis. Rubbed gently into the skin before exposure, each ointment forms a smooth, lasting "invisible glove" of protection.

West will be glad to help plan an effective dermatitis prevention program for your plant. WRITE US TODAY!



SEND FOR FREE SAMPLE

WEST ompany

42-16 West Street, Long Island City 1, N. Y. PLEASE CLIP TO YOUR BUSINESS LETTERHEAD

#### WEST DISINFECTING COMPANY

42-16 West Street, Long Island City 1, N. Y.

Gentlemen:

Please send me FREE booklets and samples of LAN-O-KLEEN

SULPHO | PROTECTIVE CREAMS |

I am interested in a non-obligating FREE Demonstration 🗌

Name Position

Address

City State 1

# Safeguard your Journ Droduction Goal with WELL VALVES

Probably the chief reason why American Industry leads the world in productivity is the practice of setting up production goals-and then achieving them.

Naturally the achievement depends, to a large extent, on the human element; but in this technological age the efficiency of equipment-and especially flow control equipment-plays a major part.

That's why Powell builds a line of valves to meet the specific requirements of every known industrial flow control service. Furthermore, in every valve, long life and dependability have been emphasized.

So, no matter what your flow control problems may be, Powell has the answers. Write for full information on applications of Powell Valves.



Fig. 512-150-pound Bronze Gate Valve with screwed ends, screwed-In bonnet, inside screw non-rising stem and tapered solid wedge.



Globe Valve with screwed ends, union bonnet, renewable specially heat treated stainless steel seat and regrindable, renewable wear-resisting "Powellable wear-resisting "Pium" nickel-bronze disc.



Fig. 190-150-pound Iron Body ronze Mounted "Irenew" Valve. Has screwed ends, union bonnet and regrindable, renew-able wear-resisting "Powellium" nickel-bronze seat and disc.



The Wm. Powell Company, Cincinnati 22, Ohio

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

#### SANDVIK SPECIALIZED SPRING STEELS . . .

Do your requirements often call for consistent, repeated precision in spring steel?

In SANDVIK spring steels, accurate gauge is uniformly maintained both along and across the strip. This gauge uniformity assures continuous production precision from coil to coil.

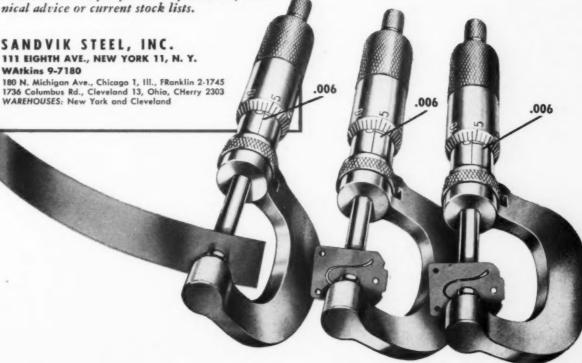
SANDVIK high carbon and alloyed strip steels are supplied:

- In special analyses for specific applications
- Annealed, unannealed or hardened and tempered
- Precision-rolled in thicknesses from .001"
- With bright finish or polished bright, yellow
- With round edges or square edges
- In a wide range of widths

give you **Continuous Precision** Phone or write for further information, tech-

SANDVIK STEEL, INC. 111 EIGHTH AVE., NEW YORK 11, N. Y. WAtkins 9-7180

180 N. Michigan Ave., Chicago 1, Ill., FRanklin 2-1745 1736 Columbus Rd., Cleveland 13, Ohio, CHerry 2303 WAREHOUSES: New York and Cleveland



Quality Stee

SOME SANDVIK SPECIALTY SPRING STEELS — Band Saw Steels; Metal Band, Wood Band and Butcher Band Camera Shutter Steel Clock and Watch Spring Steels Watch Parts Steels · Compressor Valve Steel · Doctor Blade Steel · Feeler Gauge Steel · Flapper Valve Steel · Knife Steels · Razor Blade Steel · Reed Steel · Shock Absorber Steel · Sinker Steel · Spring Steels · Tape and Rule Steel · Textile Steels Trowel Steel · Vibrator Reed Steel

## AO C1300 On-Center Metal Goggles

They're Back Again Protecting Workers Comfortably!



Again available...AO C1300 line of metal spectacle goggles provides peak protection against flying particles with the utmost in wearing ease.

SAFETY FEATURES include orbit-shaped, Super Armorplate lenses (or 6 Curve Super Armorplate lenses) scientifically hardened to resist impact...strong double-braced bridge ... close-to-face frame . . . amply ventilated side shields for side protection where necessary.

COMFORT FEATURES include lightness of goggles on the nose...flexible, acetate rocking nose pads — large enough to distribute pressure over a wide area . . . insulated temples which are heat resistant and perspiration proof . . . a variety of goggle sizes for precise fitting of the individual worker. Your nearest AO Safety Representative can supply you.

#### Recommended Uses

Clear Lenses Without Side Shields. For frontal protection on operations such as machine and hand tool work, chemical and physical lab. work.

Clear Lenses With Side Shields. For frontal and side protection on operations such as chipping, grinding, riveting, machine work, hand tool, spot welding and bottling operations.

Colobar Lenses. When above operations also involve danger from glare, heat, ultraviolet and infra-red radiations, Calobar lenses should be worn. Also recommended for welders' helpers (under helmet), workers near welding work, railroad men, truck drivers and helpers, bus drivers and others needing protection from wind, dust, cinders, flying particles and glare.



Southbridge, Massachusetts . Branches in Principal Cities

# Clutch thent with one hand saves time... Money



## —the Red Elastic Collar helps JUMP PRODUCTION...CUT COST!

The nut and jam nut combination formerly used on the clutch adjustment rod of the Hystaway—tractor-mounted excavator manufactured by the Hyster Company at Portland, Oregon, had two disadvantages: (1) two wrenches were required to adjust the clutch (one to hold the first nut, and one to loosen and reset the jam nut); and, (2) it was difficult to get two hands through the limited frame opening.

After exhaustive experimentation, the Company adopted Elastic Stop Nuts. Now clutch adjustment can be made quickly, easily and exactly—

with one hand.

Further, since Elastic Stop Nuts lock in position anywhere on a bolt or stud, only one adjustment is usually necessary—the first. Once this adjustment is made, the Red Elastic Collar maintains that precise setting permanently. Neither vibration nor impact will shake the nuts loose. Also, Elastic Stop Nuts keep bolt and nut threads rust-free . . . seal against liquid seepage along bolt threads . . . do not damage the threads. And, of course, Elastic Stop Nuts are re-usable.

HERE'S A CHALLENGE: Send us complete details of your toughest bolted trouble spot. We'll supply test nuts—FREE, in experimental quantities. Or, if you want

further information, write Elastic Stop Nut Corporation of America, Union, N. J. Representatives and Agents are located in many principal cities.



THE FAMOUS RED ELASTIC COLLAR
IS VISIBLE EVIDENCE OF
LOCKING SECURITY

Threadless and permanently elastic, it provides these 4 outstanding features:

- 1. Protects against nuts loosening due to VIBRATION
- 2. Keeps locking threads CORRO-SION FREE
- 3. Provides for accurate BOLT LOADING
- 4. Seals against LIQUID LEAKAGE along the bolt threads

#### **ELASTIC STOP NUTS**



HIGH TENSILE



NCHOR



WING



SPLINE



CLINCH



CHANNEL



NYLON

OVER 450 TYPES AND SIZES IMMEDIATELY AVAILABLE FROM STOCK



# For Positive, Yet Flexible Direct Drives

Here's a Flexible Coupling that supplies the equipment manufacturer and machine user with a practical and efficient unit for connecting power equipment to direct drives. Note the simple, alf-steel construction... no short-lived materials to wear out or replace! Precision Roller Chain, assembled around accurately cut, hardened steel sprockets provide positive operation with inherent flexibility... assures long life. Additional Whitney features include: ease of installation, compactness, allows for motor end play, disconnects without removing shafts and bearings, allows for slight shaft misalignment. These are good reasons why you should specify and use Whitney Flexible Couplings for lasting, all-round performance and machine protection.

Whitney Roller Chain Flexible Couplings are adaptable to a wide range of transmission service, covering light, medium or heavy loads. You can use them to connect electric motors, gasoline engines, diesel engines, steam engines, etc., to any direct drive units, such as pumpers, compressors, blowers, beaters, speed reducers,—in short, to any of your production machinery where a positive but flexible direct drive is required.

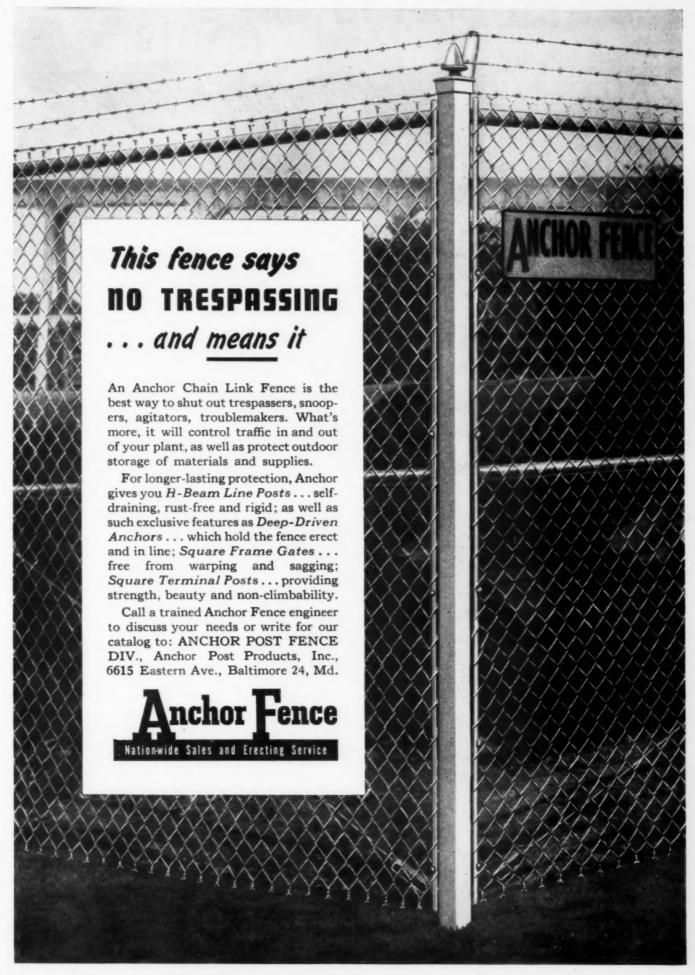
Available from factory or distributor stock in popular sizes covering a wide range of application — from fractional to hundreds of horsepower. For complete information and engineering bulletin, write us today.

#### OTHER WHITNEY CHAIN PRODUCTS

- Roller Chain-single and multiple widths
- · Silent Chain
- Conveyor Chain
- Cut Tooth Sprockets

#### Whitney Chain & Mfg. Co.

Division of Whitney-Hanson Industries, Inc. 207 HAMILTON STREET, HARTFORD 2, CONN.



Here's a PLUS
that means
SAFETY-PLUS

for



It's Sawyer's new LIGHTHOUSE line of safety-conditioned waterproof work coats! Trimmed with the amazing reflective fabric, Scotchlite\*, these coats glow brilliantly in the beams of approaching headlights. Your workers are clearly visible to oncoming vehicles at night!

These coats mean new after-dark protection for your workers! Perfect for stormy weather comfort and protection; 100% waterproof, roomy, rugged, lightweight, pliable. Black or yellow.

Remember! Sawyer makes the best in work clothing! Aprons; waterproof coats, jackets, pants; sturdy outdoor wear.

.T.M. of the 3 M Co.

For Complete Details, Write . . .

#### THE H. M. SAWYER & SON COMPANY

Cambridge, Mass.

# filosofy of buying

FOR some months past, commercial reporters have stressed the fact that competition is returning to the American business scene. More recently they are turning their attention to the nature of the new competition, and are disillusioned to find it something less than "the life of trade". Observing queues of salesmen besieging buying offices again, Modern Industry wryly comments that they are "offering purchasers at least a choice of high prices". And the Congressional investigation of gray market opera-tions in steel discovered one instance of a firm carrying on its sales activities through no less than 27 dummy corporations, the sales manager blandly explaining that members of his staff were given the option of selling under various trade names. In this case, the questionable "competition" gave purchasers a choice of firm names on the invoice.

T HAS frequently been pointed out that today's purchasing agent needs to have more than a speaking acquaintance with the law to stay out of trouble. That fact is emphasized anew in a recently circulated legal paper on the seemingly innocent and long-accepted business practice of the quantity discount. Counsel warns that quantity discounts may be held to constitute discrimination unless it can be proved that actual savings in supplier's cost of goods or cost of doing business, commensurate with the discount, can be proved-and it's one of those laws under which the buyer, as well as the seller, is liable to suit and dam-

SO YOU go to an Association meeting to get more information on the complexities of buying, and to forget your troubles. Maybe you're lucky enough to win the door prize, which has grown to a fairly sizeable jackpot because the fellow whose name was drawn the previous month wasn't there to collect. Beware again, for the National Better Business Bureau warns that a rule requiring the winner to be present

technically constitutes a factor of legal "consideration", which makes the procedure a lottery. The old Roman who coined the phrase "Caveat emptor—Let the buyer beware!" some centuries ago was a pretty far-sighted gent.

B UYERS who have attended recent N.A P.A. conventions in New York will remember G. W Howard Ahl, Vice President of the New York Association, as one of the fellows generally to be found at the registration desk with a courteous and helpful welcome for the visitor. Mr. Ahl, who is with Philip Morris & Co., Ltd., advises us that his firm's famous "Johnnie" is now available, in the form of a 15-inch cutout in full color, to extend a cheery welcome in business offices and plants. The cutouts are furnished either in heavy cardboard with easel back or on gummed paper for attaching to door or wall. There is a choice of two appropriate thoughts: "Even if you don't stop, smile when you go by" and/or "It's fun to be nice to people". Mr Ahl writes, "Philip Morris & Co. will be glad to supply any purchasing agent who addresses his request to our advertising department, at 119 Fifth Avenue, New York 3, N. Y.

SELL your supplier on the importance and desirability of your company as a customer. That's good purchasing policy in any case, and it may be particularly helpful in lining up suppliers for scarce materials—steel, for instance. So reasons John J. Noel, Purchasing Agent for Culligan Zeolite Company of Northbrook, Illinois, who has appointed himself that sort of purchasing-salesman and has been doing an intensive and rather spectacular selling job, calling on the companies he'd like to buy from, armed with a sales portfolio (modestly termed a "brochure") that's bound in stainless steel, dramatizing the company's steadily increasing requirements of that metal, as evidenced by its record of solid growth, expanding business, and a projection of future needs in the light of anticipated further growth. It makes rather a sound argument for the supplier who is looking beyond immediate demand for an outlet for his product.

The widely syndicated column of Dr. George W Crane, entitled "Worry Clinic" draws upon pur-HE widely syndicated column by chasing department experience to illustrate a recent discourse on the theme-"Don't be over-anxious". The case in question concerned a buyer who was in the market for thirty-five check writing machines. Salesman No. 1, who was thinking in terms of one or two machines, got along pretty well until the larger quantity was mentioned, whereupon he became so visibly astonished and overjoyed that the buyer lost confidence in him and his product and applied the brakes of caution. Salesman No. 2, coming to the same point quired, "When do you want de-livery?"

P. S. He walked out of the buyer's office with the order.

HERE'S a familiar ring in the report that sales managers who never operated in a buyers' market have little conception of what it takes to move their product under stringent competitive conditions. Purchasing men faced that problem, from the buying side, three years ago. Now the National Federation of Sales Executives has made a survey of the field and finds that prewar and depression experience rate heavily for the top jobs in sales management-54% of the leaders started selling prior to 1930, and another 30% before 1940.

W HAT makes market scarcities, and what really consitutes the demand for a commodity? These fundamental questions have been reopened with the statement by E. G. Grace of Bethlehem Steel Corporation that the actual demand for steel "has been very much padded". Simultaneously a widely circulated trade report attributes the recent easing of the steel situation to "cancellations of duplicate orders and cutbacks in excessive orders". Could be. Could also be that the true relationship of cause and effect is the other way around. Forward coverage involves both time and quantity considerations. Whether it is prudent or excessive depends on the point of view.

#### **OUT OF 1001 TEST TUBES**





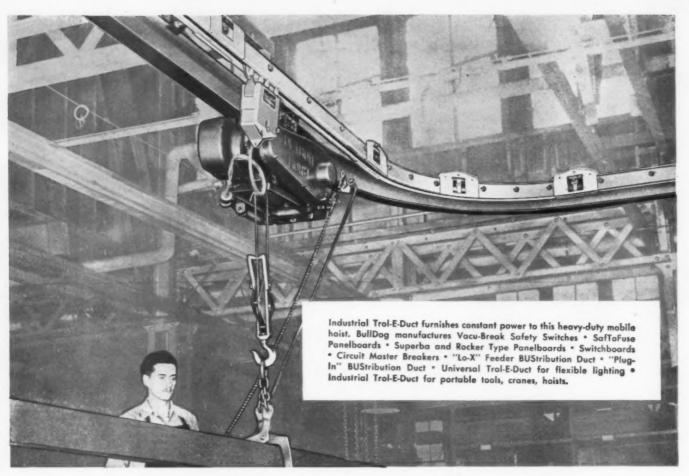
AND, the same expert craftsmanship that has made Chicago Mounted Wheels the most widely used in industry today accounts for the outstanding results you get with Chicago Grinding Wheels and Cut-off Wheels.

#### FREE ENGINEERING SERVICE

Let us help you with your grinding problems. Send for our Engineering Data Sheet making it easy for you to submit information from which we can recommend the abrasives that will do your jobs best.

CHICAGO WHEEL & MFG. CO., 1101 W. Monroe St., Dept. PG, Chicago 7, III.

WRITE	Send Engineering Data Sheet	Send Catalog	
FOR	Name	_	
FREE CATALOG	Address		
	1		



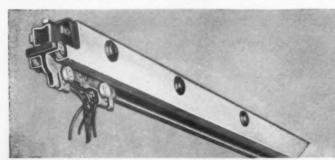
# Perfect power partner for mobile electrical loads

When power takes a trolley ride to stay near the portable tool or other moving equipment it supplies—that's good news for production!

BullDog Industrial Trol-E-Duct provides a power source for moving electrical loads, does away with lengthy extension cords and dangerous open trolley wires.

Industrial Trol-E-Duct is designed for such electrical "loads" as crane and hoist runs, or portable tools. Every inch of the continuous slot that runs the length of the duct is an electrical outlet. Tap-off trolleys roll smoothly alongside cranes, hoists and tools, feeding power as they move along with the job.

Duct is made in ten foot sections, both straight and curved, to fit any floor plan. It is sturdily constructed



Close-up view of section of Trol-E-Duct, showing how tap-off trolley rides in slot. Trolleys are fed electrically and supported mechanically by Industrial Trol-E-Duct.

of Lustro-galvanized steel sheathing enclosing the copper bus bars. Industrial Trol-E-Duct is 100% salvable, can be relocated time and again to meet any change in your plant. Capacity: 90 Amps., 575 Volts or less.

**Call** in a BullDog Field Engineer for further information on this remarkable power distribution system. If you like, he can easily arrange to show you a similar installation in your own neighborhood.

**BullDog** Field Engineers welcome the opportunity to sit in with you during the early planning stages of a building project. Their knowledge of electrical distribution layout can mean savings in installation costs, as well as efficiency and reliability in actual operation. Why not take advantage of this service?

#### **BULLDOG ELECTRIC PRODUCTS COMPANY**

DETROIT 32, MICHIGAN • FIELD OFFICES IN ALL PRINCIPAL CITIES IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO



BULLDOG

HEADQUARTERS FOR ELECTRICAL DISTRIBUTION

# AVALLABLE RIGHT NOW!

#### SHELVING

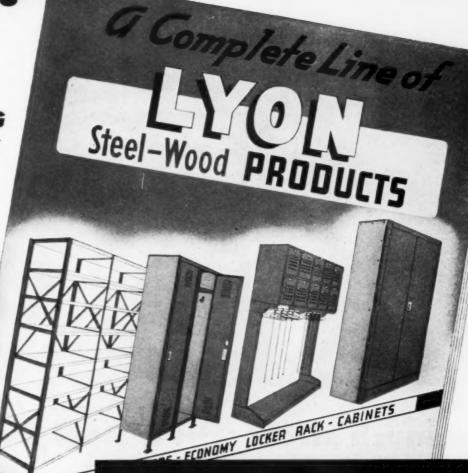
Entire framework of steel. Hardwood shelves, steel reinforced. Instantly adjustable without tools. No bolts or nuts.

#### LOCKERS

Entire frame and doors of steel. Shelves, sides and backs of hard, durable Masonite, steel reinforced. Single or double tier. Wide range of sizes.

#### CABINETS

Entire frame and doors of steel. Sides, backs and shelves of hard, durable tempered Masonite, steel reinforced. Shelves adjustable every 2" without tools.



• Write, wire or mail the coupon for Descriptive Catalog, giving complete specifications and prices.

#### LYON

A PARTIAL LIST OF

LYON PRODUCTS

METAL PRODUCTS.

5HELVI.

General Offices Monroe Ave., Aurora, III. Branches and Dealers in All Principal Cities

LYON Metal Products, Inc. 333 Monroe Avenue, Aurora, III.

Please send me free copy of your Bulletin No. 900.

Company Name\_

Address

- Kitchen Cabinets
  - Lockers

     Display Equipment
    Wood Working Benches
     Hanging Cabinets
    Economy Locker Racks
     Welding Benches
    - · Work Benches Drawing Tables

City.

State

- Filing Cabinets
   Storage Cabinets
   Conveyors
   Tool Stands
   Flat Drawer Files
   Cabinet Benches
   Bench Drawers
   Shop Boxes
   Service Carts
   Tool Trays
   Tool Boxes Bar Racks
  Hopper Bins
  Desks
  Bin Units
  Parts Cases
  Stools
  - Sorting Files
     Ironing Tables

- · Folding Chairs
- Drawer Units



### How much stress will a steel strap take?

SIGNODE KNOWS. The guillotine-like machine shown above was photographed in our modern, fully equipped research laboratory. There it is used by our packaging and shipping engineers to determine the holding power of steel strapping, BrakemaN\* plates, anchor plates and seals—when subjected to sudden impact.

From such tests—and we conduct a wide variety, both in the laboratory and in the field—these men get the answers to questions that are common to *all* shippers. Then they translate that knowledge into new and better ways of protecting products in transit.

The result is that no matter how, where or what you ship... cartons of clothing to China, a single crate to Seattle, or capacity carloads from coast to coast... the chances are better than even that one of our representatives can help you do it better, faster, at less cost. For further information write

#### SIGNODE STEEL STRAPPING COMPANY

2602 N. Western Avenue

Chicago 47, Illinois

#### SIGNODE\* means -

Steel strapping

Strapping tools

**Power strapping machines** 

Special lithographed seals

BrakemaN\* plates

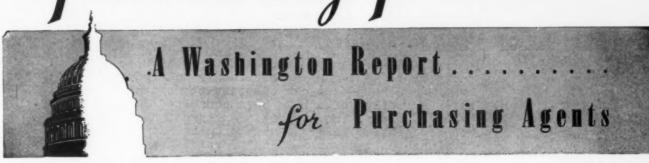
**Anchor plates** 

Retaining strips

Retaining doors

\*Reg. U. S. Pat. Off,

# Purchasing Previews



GOVERNMENT OPTIMISTIC ON STATE OF THE ECONOMY . . . .

March 1, 1949

High level economy is sufficiently propped up by Government spending commitments and price guarantees to ride out the transition period from seller's to buyer's market without a major disruption. This is the view of Government economists, who have indicated more optimism than business spokesmen.

In raw materials, a Government stockpiling program will siphon off any surplus that may develop. In processed goods—especially capital equipment—the foreign demand, financed with Marshall Plan money, can lap up surplus output. Where surplus plant facility develops, the large requirements of the U.S. military, plus the equipment needs of rearming Western Europe, can take up excess capacity

These are the factors as they appear in blueprint.
There is no tendency on the part of non-Government sources to question the potency of the Government's spending commitments. The only question is whether the program as rounded out can achieve the balance which is intended—whether the spending and buying programs can sufficiently influence the demand for textiles and small household appliances and such other products where the consumer demand has slackened.

Government economists indicate that the slackening off process was to be expected, and that the transition can be made to a buyer's market without upset, due to the ability to divert labor to other activity.

The thinking is that as long as employment continues at a high level at high wages, mass purchasing power is constantly being renewed.

#### "FOURTH ROUND" SOMEWHAT SUBDUED . . . .

Biggest decision yet to be made concerns the fourth round of wage increases. Labor union spokesmen indicate that they are in for all the traffic will bear, but at the same time, this self-centered interest is tinctured with considerable realism.

Automotive industry labor union leaders take the position that the automotive industry still has considerable leeway in the wage picture, and unless there is a sudden change in public demand for automobiles, the unions will seek a substantial wage increase.

For the first time since the war, a new factor has been injected in the union wage controversy. The decline in food and soft goods prices takes a good deal of the force out of the previous labor argument that a higher wage is needed to compensate for the higher cost of living.

In some lines, price levels are considerably below those that prevailed before the third round of wage increases was initiated. This circumstance has been especially forceful in conditioning the union position in the textile industry. Textiles is one of the soft spots in the retail

sales picture, and sellers have been able to maintain

volume only by cutting prices.

Textile workers fear that unreasonable wage demands would have to be reflected in retail prices almost immediately, and the resultant decline in sales volume would mean large scale layoffs.

#### U. S. "KNOW-HOW" TO BE SHARED . . . .

President Truman's espousal of a program to share U. S. industrial "know-how" with friendly under-developed countries came as a distinct surprise to Government agencies which normally would have been consulted in such a plan.

Nevertheless, the general plan is not new. There has been suggestion before that the United States aid underdeveloped nations as a means of raising their living standards—and thereby increasing the import requirements of these nations.

First step in this direction was actually taken under the initiative of the British, who have sent missions over

to the U.S. to study our industrial methods.

The detailed plans of accomplishing the sharing of industrial knowledge have yet to be developed, but in the long run the program is likely to become a more practical persuader of U.S. good intentions than grants of either food or money.

#### U.S. URGED TO OVERHAUL PROCUREMENT PRACTICES . . . .

Hoover Commission on the Organization of the Executive Branch of the Government is expected to provide a working

plan for overhauling the Government agencies.

In the past, the hue and cry most often raised against Government functions was directed at graft and corruption, but the numerous checks and balances in the Government have minimized these possibilities. Now, the great criticism of Government is duplication of function, rigid bureaucracy, overstaffing of personnel, and inefficiency of organization.

In the field of Government procurement, the Hoover Commission has indicated that there are opportunities for annual savings of \$250,000,000 in the Government's

purchase of supplies and equipment.

Much of this saving would be accomplished by simplifying the procedures of purchasing small items, where the cost of making the procurement equals, and in many cases exceeds, the actual cost of the item purchased.

Hoover Commission criticism of the current procurement practices of the Government calls for a greater recognition of supply as an an important executive function; reducing the amount of red tape involved in Government purchasing; raising Government pay to attract professional purchasing competence; better planning of advance buying schedules; and standardization of procurement, cataloging and storage practices of the various Government agencies.

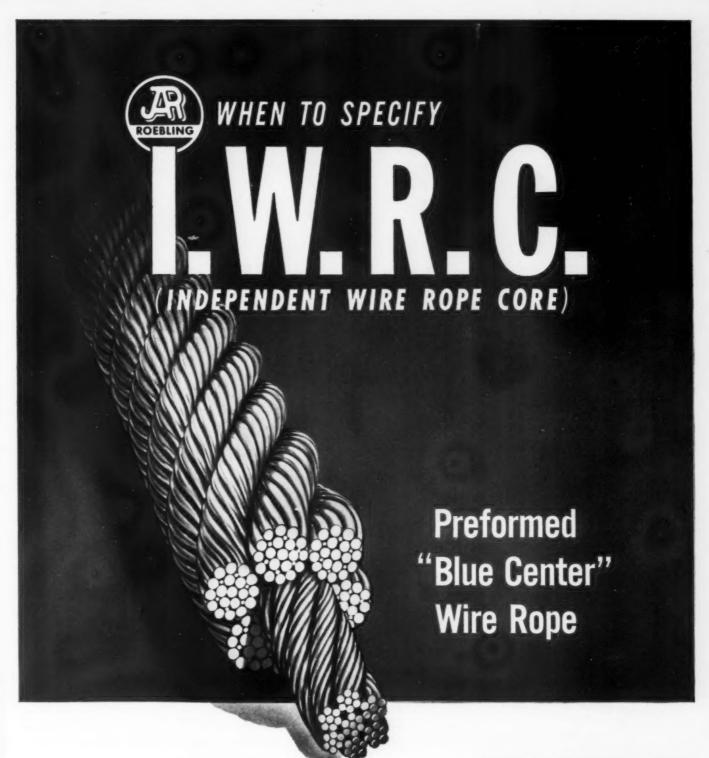
#### SHIFT IN INVENTORY PATTERN UNDERWAY . . . .

Department of Commerce officials report a significant shift in the character of inventory holdings of manufacturers. Stocks of raw materials and goods in process have been rising more slowly, while holdings of finished goods have accumulated at a somewhat faster rate.

This process had been going on throughout 1948, and result has been that two-thirds of the total increase in value of manufacturers' inventories has been in finished goods. While the trend was noted for the entire 12-month periods, the rate accelerated sharply during the latter part of the year.

Concurrent with this trend, there was a tendency among department stores and other merchandisers to cut

down their level of outstanding orders.



#### PERFORMANCE-PROVEN WITH PLANT MEN

IN THE TOUGH SPOTS, rope with an Independent Wire Rope Core gives best and longest service! I.W.R.C. is outstanding where operating pressures are high; where heat resistance, additional strength, or minimum stretch are essential. But remember this . . . the

same features that make I.W.R.C. best for the tough spots help make it the longest-performing and most economical specification for a wide range of applications!

For use with locomotive cranes, Roebling 6 x 19 Preformed "Blue Center" Steel Wire Rope with I.W.R.C. is your most satisfactory choice—safe, easy to handle, and saving real wire rope dollars . . . All Roebling Slings employ rope with I.W.R.C. to afford top resistance against compression.

Have your Roebling Field Man help select the *right* rope for your special requirements. John A. Roebling's Sons Company, Trenton 2, New Jersey.

-WRITE OR CALL THE ROEBLING REPRESENTATIVE AT YOUR NEAREST-ROEBLING OFFICE AND WAREHOUSE

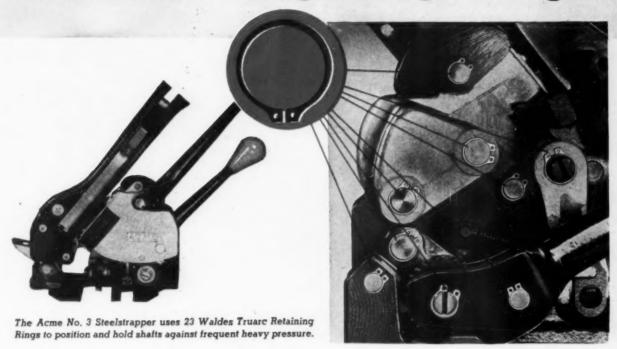
Atlanta, 934 Avon Ave. \* Boston, 51 Sleeper St. \* Chicago, 5525 W. Roosevelt Rd. \* Cleveland, 701 St. Clair Ave., N. E. \* Denver, 1635 17th St. \* Houston, 6216 Navigation Blvd. \* Los Angeles, 216 S. Alameda St. \* New York, 19 Rector St. \* Philadelphia, 12 S. 12th St. \* Pittsburgh, 855 W. North Ave. \* Portland, Ore., 1032 N. W. 14th Ave. \* San Francisco, 1740 17th St. \* Seattle, 900 First Ave.

ROEBLING

A CENTURY OF CONFIDENCE A



# 23 Truarc rings permit changeover to centerless grinding savings

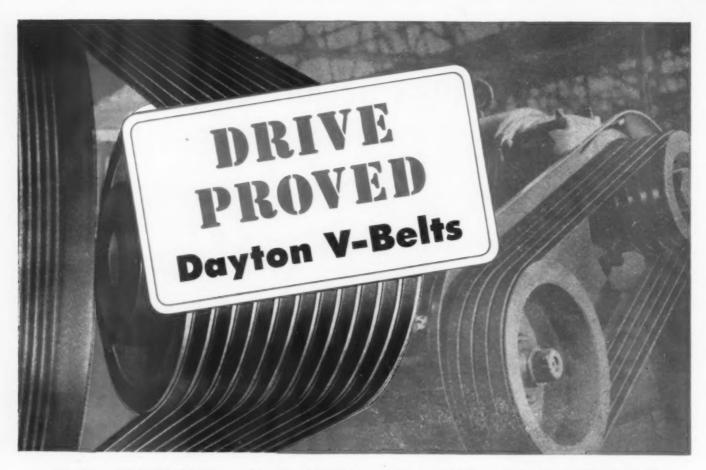


"The use of Truarc Retaining Rings permits centerless grinding of pins instead of plunge-grinding. This eliminates the problem of taper and reduces the required tensional tolerances of these parts," reports Acme Steel Company of Chicago. "Furthermore, use of Truarc rings gives the Steelstrapper smoother lines by eliminating unsightly projections. This results in a more streamlined housing, a definite sales advantage."

Making repairs is much easier too, because

Truarc simplifies assembly and disassembly. Truarc rings are precision engineered, may be used over and over again, remain always circular to give a never-failing grip. Wherever you use machined shoulders, nuts, bolts, snap rings, cotter pins—there's a Truarc ring that does a better job of holding parts together. Truarc cuts costs, adds sales advantages. Waldes Truarc engineers will be glad to show how Truarc can help you. Send us your problem.





## AS NEAR AS YOUR TELEPHONE

A new V-Belt service by Dayton, to save you time and money three ways:

1. "Drive Proved" V-Belts—the right belt for your particular drive. For Dayton has made more than 100 million V-Belts. They have been "Drive Proved" in every kind of industry, under every possible operating condition of heat, cold, dirt, dust and oil. They have proved their ability to save space; provide positive power; start and stop smoothly; run quietly, without vibration and last longer than any ordinary belt.

2. As Near as Your Telephone. There is a Dayton V-Belt Distributor near you. He is equipped with the specialized knowledge to recommend the right drive for you. You'll find him listed in the classified section of your telephone directory or his representative is now calling at your plant.

3. Instant Maintenance Service from Local Stocks. Your Dayton Distributor maintains complete stocks of Dayton "Drive Proved" V-Belts and pulleys. He is prepared to give you instant service for existing or future drives, and to provide you with an immediate source of mill supplies.

Put this new service to work in your plant now. Equip your drives with Dayton "Drive Proved" V-Belts and be sure you are getting the maximum in drive performance and service. Call your Dayton V-Belt Distributor today. The Dayton Rubber Company, Dayton, Obio.

ONLY Dayton V-Belts
are "DRIVE PROVED" for the Job!

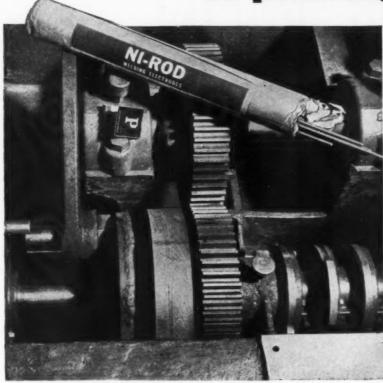
Dayton Thorobred—for normal and heavy duty drives.
Dayton FHP—for small machines and appliances.
Dayton Cog—for shortest centers, smallest pulleys.
Dayton Steel Cable—for extreme loads and speeds.
ALL STOCKED BY YOUR LOCAL DAYTON V-BELT DISTRIBUTOR

Dayton Rubber

## Ni-Rod Ventured -

## Time and Money Gained

in printing press repairs



A worn cast iron cam on this Miehle vertical press was built up with beads of NI-ROD without dismantling the gear box. The welder had no previous experience with metal arc welding.



This platen cam casting from a John Thompson press had two sections broken off. Both were restored by welding with NI-ROD,

THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street, New York 5, N. Y. Reg. U. S. Pat. Off.

RECENTLY, a firm that specializes in the repair and reconditioning of worn printing machinery took a gamble...a small one, but it paid handsome dividends.

Much of their repair work consisted of brazing and gas welding broken cast iron frames and worn machine members. So welding was an old story to them. But... they had never tried metal-arc welding.

Then they heard about the fine performance of Ni-Rod\* electrodes in cast-iron maintenance work. They decided to give them a trial. Result? Today they use Ni-Rod for most of their welding work. And like thousands of other shops, they find that Ni-Rod saves both time and money; gives better results with less effort.

Ni-Rod gives sound, non-porous, machinable welds in all grades of cast iron. Slag removal is easy, Ni-Rod is stable-arcing in all positions with either AC or DC current. Preheating or post-heating is seldom necessary... an important time-saving feature. You can use Ni-Rod for joining cast iron to steel, too.

Why not try Ni-Rod in your own shop ... soon? Discover for yourself why 4 out of 5 shops re-order Ni-Rod, once they've tried it.

Your nearest INCO distributor stocks Ni-Rod in 3/32'', 1/8'', 5/32'' and 3/16'' diameters.

Write for your copy of the helpful new 8-page booklet: "NI-ROD...a new electrode for any east iron welding."



## Better utilization is leading to higher productivity...lower cost





New developments in abrasive uses are being introduced continually. They are offering new production efficiencies and often provide the solution to difficult and complicated problems.

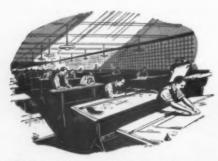
The degree to which these benefits and improvements are realized depends upon obtaining the full value offered by these products. It means utilizing them to best advantage. The best product available will not deliver top performance

under unsuitable conditions. A slight change in grit or splice—or in grade, shape, or speed can often reduce a cost or improve a finish. That is why it is so important to "fit" the abrasive products you use to the job. In the experience of many abrasive users, it is a time and money-saving must.

If you would like to know whether you can use a better abrasive product or get more production or econ-

omy from the abrasive tools you are now using, it's a simple matter to call in CARBORUNDUM. We invite you to get acquainted with our service where similar problems are being worked out every day. Abrasive engineering, technical cooperative assistance, and the vast facilities and experience of the leading name in abrasives are always ready

to serve you. The Carborundum Company, Niagara Falls, N. Y.



The only complete line of Abrasive Tools is

### CARBORUNDUM

TRADE MARK

"Carborundum" and "Aloxite" are registered trademarks which indicate manufacture by The Carborundum Company

## Engineering News ON ABRASIVE PRODUCTS

#### Greater Efficiency from New Coated Abrasives

A much higher degree of efficiency is being realized in dry grinding operations on metals. It is credited to the development of a new Resin Industrial Cloth specially designed for use on backstand idlers. This product is particularly effective on operations involving heavy stock removal, sharp contours, high belt speeds, heat sensitive metals, excessive frictional heat, humidity and other complications.

Strength, heat-resistance and backing characteristics provide longer productive life where severe strains are imposed. A remarkable freedom from gumming and loading, together with resistance to grain shedding, produce fine finishes, results in infrequent belt changes. This means stepped up production...longer runs.

To attain the greatest productivity at low cost from Resin Industrial Cloth, attention must be closely centered on its correct selection and utilization. Our field men are fully informed and experienced. It is only logical to ask their advice on your particular application. They will be glad to cooperate.



#### New Development in High Speed Snagging Wheels

B-5 and B-7N are a recent development in ALOXITE aluminum oxide resinoid bond wheels that represent a major advance in high speed snagging. Actual operating experience in foundry, mill, forge and welding shop operations confirms a long list of advantages. A cutting rate as high as 9500 surface feet per minute is maintained continuously throughout the extended life of these wheels; primarily because the tendency to load is much less than with previous wheels of this type. A maximum degree of safety is provided the operator under severe conditions. Speed tests to destruction reveal a much higher mechanical strength while field tests show greatly improved resistance to heat and mechanical shock.



On the less severe applications, the relatively softer bond B-5 provides faster cutting and delivers greater efficiency. The tougher B-7N is more efficient on severe operations and lasts longer. As further proof that this strength and toughness do not detract from grinding efficiency, more than a few operating reports show savings up to 50% realized where correct selection and application has been made. The experience and knowledge that fostered the development of these wheels is available, through our men in the field, in selecting the correct grit and grade to produce such results.

For prompt attention to abrasive problems, call your nearest branch office of The Carborundum Company.





with today's installation costs\* only the

Longest-Lived

will be economical

\*The lifetime cost of a cable rather than its first cost is the only true measure. Okonite wires and cables, built to stand up better and longer, can offset high installation costs. When Okonite insulated wires and cables are vulcanized, every foot that enters the huge pressure chamber receives uniform treatment. One reason is this:— on the reel or drum as it goes into the vulcanizer, the complete length of cable is compressed within a continuous metal mold. And this metal mold insures equal transfer of the heat throughout every portion of the insulation.

When the pure tin mold is peeled off after removing the cable from the chamber, the entire length has been simultaneously vulcanized at the same temperature and pressure. The benefits that result include longer life, greater density and higher electrical values.

Bulletin PG-101 describes and shows this operation and others — all based on Okonite's years of experience in making the longest-lived cable money can buy. Write to The Okonite Company, Passaic, N. J.

9511



## In Modern Automobiles

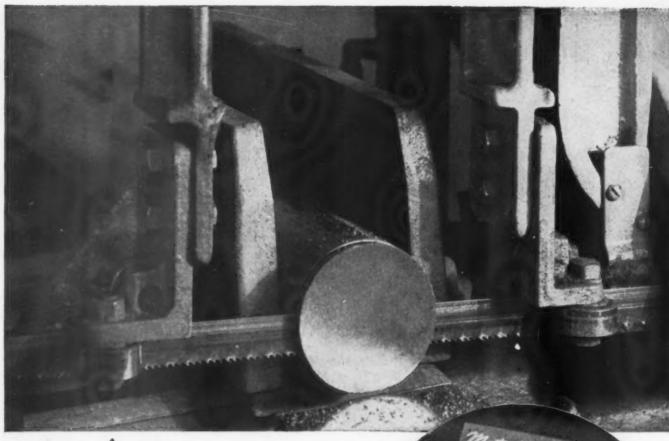


## GRAY IRON CASTINGS

Where a dense non-porous structure, freedom from leakage under pressure, and high finish are important, Eaton Permanent Mold Gray Iron Castings provide an ideal combination of characteristics. Uniform structure throughout the casting, freedom from growth, ability to take a mirror-like finish, and free machinability have led to the use of millions of Eaton Permanent Mold Gray Iron Castings annually in automobiles and motor trucks. This is equally true in domestic appliances, business machines, and related industries.

Eaton engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product. Send for the illustrated booklet, "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings."





## Climbon the SIMONDS "BAND-SAW WAGON"

Sav Hours Cutt

Save Thousands of Hours by Band-Saw
Cutting . . . instead
of Shaping, Milling,
Turning, Drilling

Getting to be a "Big Parade"... the

way shops are swinging to metal band-sawing . . . and keeping their one-purpose machines free to do the work for which they were designed.

Simonds Metal-Cutting Band Saws can do a score of jobs, and do them all at top speed and accuracy... cut-off work, contour cutting, and cutting of irregular shapes like jigs, dies, fixtures, as well as heavy straight production cuts... and many other similar jobs.

And Simonds Metal Bands earn top profits on these jobs because they're made to stay on the job many hours longer . . . running smoothly, easily, cleanly. Simonds special steel, perfect tooth-milling and even tooth-set . . . those are the Simonds extras that pay you

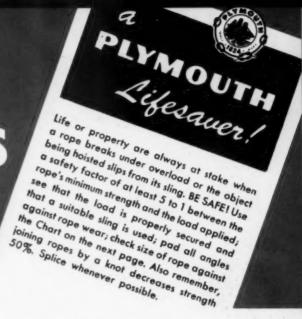
Send for this free book

extra on every Simonds Metal Band you buy. Order from your distributor today.



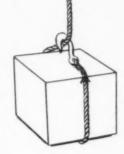
BRANCH OFFICES: 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, III.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Ave., Portland 4, Ore.; 31 W. Trent Ave., Spokane 8, Washington. Canadian Factory: 595 St. Romi St., Montreal 30, Que.

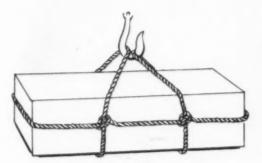
# HOW TO SLING DIFFERENT LOADS FOR HOISTING



It is impossible to set down rigging methods which will be standard for all jobs because of the variations between loads and the circumstances involved in each lift. The following, however, are recognized methods which will apply to the load you wish to lift in many cases.

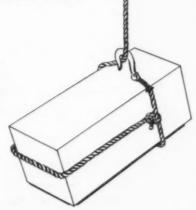
2 For small and light loads, a single sling at the center of gravity will suffice. It should fit tight around the load, tied to the standing part with a bowline or held by a hook attached to the end.





To lift a load evenly, use two slings as shown. Slings should be of equal length and spaced equidistant from either end. As an extra precaution, an extra rope should be run completely around the load and tied where it crosses each sling.

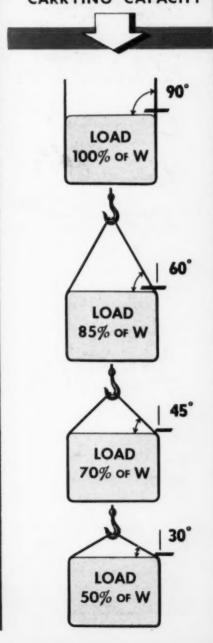
When a load must be hoisted and moved into a small opening, an uneven lift is helpful. Attach sling as shown in (2), but off-center as indicated, then run another rope around the long end and tie to the sling in order to keep load from slipping out.





Barrels and small loads of almost any shape and weight can be hoisted by use of a double sling as shown above, tying the end to the standing part with a bowline.

HOW THE ANGLE OF A SLING ALTERS ITS SAFE CARRYING CAPACITY



## ROPE SIZES and STRENGTHS

NOTE: These specifications are for three strand rope with standard lay. To figure safe loads use at least a 5 to 1 safety factor.

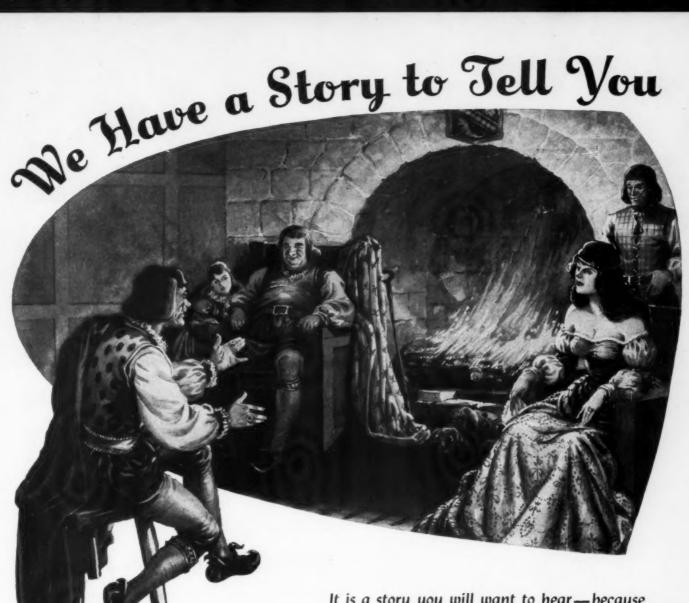
NOMINAL SIZE				MINIMUM LENGTH IN	APPROXIMATE	MINIMUM BREAKIN	MINIMUM BREAKING STRENGTH			
THREADS	CIRCUMFERENCE DIAMETER		OF 100 FEET	ONE POUND (NET WGT.)	GROSS WGT.	PLYMOUTH SHIP BRAND MANILA	PLYMOUTH			
	Inches	Inches	Pounds	Feet	Pounds	Pounds	Pounds			
6-Fine	9/16	3/16	1.47	67.9	50	450	360			
6	3/4	1/4	1.96	51.0	50	600	480			
9	1	5/16	2.84	35.2	50	1,000	800			
12	1 1/8	3/8	4.02	24.9	50	1,350	1,080			
15	1 1/4	7/16	5.15	19.4	63	1,750	1,400			
18	1 3/8	15/32	6.13	16.3	75	2,250	1,800			
21	1 1/2	1/2	7.35	13.6	90	2,650	2,120			
	1 3/4	9/16	10.2	9.80	125	3,450	2,760			
	2	5/8	13.1	7.65	160	4,400	3,520			
	2 1/4	3/4	16.3	6.12	200	5,400	4,320			
	2 1/2	13/16	19.1	5.23	234	6,500	5,200			
	2 3/4	7/8	22.0	4.54	270	7,700	6,160			
	3	1	26.5	3.78	324	9,000	7,200			
	3 1/4	1 1/16	30.7	3.26	375	10,500	8,400			
	3 1/2	1 1/8	35.2	2.84	432	12,000	9,600			
	3 3/4	1 1/4	40.8	2.45	502	13,500	10,800			
	4	1 5/16	46.9	2.13	576	15,000	12,000			
	4 1/2	1 1/2	58.8	1.70	720	18,500	14,800			
	5	1 5/8	73.0	1.37	893	22,500	18,000			
	5 1/2	1 3/4	87.7	1.14	1,073	26,500	21,200			
	6	2	105.	.949	1,290	31,000	24,800			
	6 1/2	2 1/8	123.	.816	1,503	36,000	28,800			
	7	2 1/4	143.	.699	1,752	41,000	32,800			
	7 1/2	2 1/2	163.	.612	2,004	46,500	37,200			
	8	2 5/8	187.	.534	2,290	52,000	41,600			
	8 1/2	2 7/8	211.	.474	2,580	58,000	46,400			
	9	3	237.	.422	2,900	64,000	51,200			
	9 1/2	3 1/8	264.	.379	3,225	71,000	56,800			
	10	3 1/4	292.	.342	3,590	77,000	61,600			
	11	3 1/2	360.	.278	4,400	91,000	72,800			
	12	4	426.	.235	5,225	105,000	84,000			

Standards: Smaller sizes of ropes are usually ordered by the number of threads, the larger sizes by circumference. 6, 9, and 12-thread rope packed in 25 and 50 lb. coils. Larger sizes are put up in full coils of 200 fathoms—in half coils of 100 fathoms. One fathom equals six fe

Plymouth will gladly mail you upon request additional copies of this valuable chart for every department of your plant or shop where rope is used. Foremen and workers will find it useful in protecting life and property — saving rope — cutting costs! The Plymouth booklet, "How to Put Rope to Work in Industry," contains many helpful hints which will enable you to get longer, safer, more efficient performance from your rope. Copies are available upon request.

PLYMOUTH CORDAGE COMPANY, PLYMOUTH, MASSACHUSETTS. DISTRICT OFFICES: BOSTON, NEW YORK, CHICAGO, NEW ORLEANS, SAN FRANCISCO. WAREHOUSE STOCKS: NEW YORK, BOSTON, PHILADELPHIA, BALTIMORE, HOUSTON, CHICAGO, SAN FRANCISCO. IN CANADA: SALES OFFICE—CORDAGE DISTRIBUTORS, LTD., TORONTO. MILL—WELLAND, ONTARIO.





It is a story you will want to hear—because it tells you of added protection and added efficiency at lower cost in the shipping of your products.

In other words, it is the story of SUPERSTRONG boxes and crates—"Bound with Steel."

You will find the full story of the SUPERSTRONG man both interesting and profitable. Write us as to when you wish him to come and see you.



RATHBORNE, HAIR AND RIDGWAY COMPANY 1440 WEST 21st PLACE . CHICAGO 8, ILLINOIS

## FRESHAIR Boosts Production

#### Oust fumes, heat, dust with Ilg

When you clear the air in your plant, you clear the way for improved worker morale and increased efficiency. Ilg blowers and fans — distributed by Graybar — are the most efficient, best-built ventilating units you can buy. For each of your ventilating needs, there's a standard Ilg unit that's "made to order."

#### HEATING, DRYING UNITS AND ACCESSORIES

Graybar has the proper Ilg equipment not only for ventilating any room — or your entire plant — but also for built-in ventilation of products . . . and Ilg unit heaters for space heating or drying . . . plus all the accessories you need, including controls and wiring supplies.

#### A Graybar survey may help you

If you or your electrical contractor would like help in determining the best ventilating system for your conditions, call our nearest office and ask for a survey of your plant. (Or if all you want is a single unit, don't hesitate to call us; Graybar gives careful attention to every order.)

#### Try Graybar First!

Graybar distributes more than 100,000 different electrical items — for wiring, lighting, communication, power, and all your other electrical needs. A phone call or letter to the nearest Graybar office will bring you catalog, price, and delivery information about anything electrical!

Graybar Electric Company, Inc. Executive offices:

Graybar Building, New York 17, N. Y.

You get the best of everything electrical everything electrical

IN OVER 100 PRINCIPAL CITIES

## PURCHASING

The National Magazine of Industrial Procurement

#### **MARCH, 1949**

Published monthly by Peeaye, Inc.
Subsidiary of
CONOVER-MAST PUBLICATIONS, INC.
Printed at: Orange, Conn.

Editorial and Executive Offices: 205 East 42nd Street, New York 17, N. Y.

Chicago Office:

737 N. Michigan Avenue, Chicago 11, III.

CONOVER-MAST PUBLICATIONS

PURCHASING

AVIATION OPERATIONS

MILL & FACTORY
CONOVER-MAST PURCHASING DIRECTORY
LIQUOR STORE & DISPENSER

Richard C. Grove ........Cleveland Manager 435 Leader Building, Cleveland

Forrest C. Pearson ......West Coast Manager 5478 Wilshire Blvd., Los Angeles 36

Advertising Representatives

(ABC)



#### CONTENTS

P	ages
Price Protection in a Declining Market	85
What N.A.P.A. Means to Me	89
Buying to Build for Atomic Energy	90
Trade Literature that Misses the Mark By W. F. Schaphorst	96
PURCHASING Reports on Purchasing Opinion	
What's Back of the Present Employment Situation?	97
Who Pays the Freight?	99
Remodelled Office Setup Promotes	
Efficient Supply Operation By J. L. Watson	102
Buying the Right Cutting Oil	
Guide to Consolidated Military Procurement	108
Reducing the Cost of Materials Handling By G. E. Henry	110
Material Control System Aids Purchasing By D. G. Baird	
Can We Put a Price Tag on Loyalty? By B. D. Henderson	119
How Buyer and Supplier Can Work Together	101
Can Work Together By C. H. Holland	121
Where We Stand	
Commodity and Business Trends	123
Great Britain's Purchasing Executives Have	
Active Association Program	131
Coordination of Decentralized Purchasing By J. E. Bedford	
Our Diminishing Natural Resources By Grey Leslie	
Back Door Selling By H. G. Specht	
Reports to Management	
When the Innocent Must Suffer By Leo T. Parker	145
MONTHLY FEATURES	
Ask "Purch", New Trade Literature	12
	64
F. O. B.	
Purchasing Previews	67
Highlights of This Issue	87
New Products—Ideas	150
Office Equipment and Supplies	239
Among the Associations	256
Fersonalities in the News	294
Letters to the Editor	
Buyer's & Seller's Mart	360
Index to Advertisers	362

PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

VOLUME XXVI. NUMBER 3. Subscription rates: United States, U. S. Possessions and Canada: \$4 per year, \$6 for two years; elsewhere: \$6 per year, \$10 for two years. Single copies 50¢. Contents are indexed weekly and annually by the Engineering Index Service. Copyright 1949 by Peeaye, Inc., in the U.S.A.

### MODERN MATERIAL HANDLING

• The very name of this electric hoist-"SPEEDWAY"-is geared to the modern idea in production efficiency.

Where material and labor expense is fixed, the only place to cut costs is in the movement of material into, through and out of your plant. Speed is economy.

See your WRIGHT distributor. Ask him about the WRIGHT "Speedway"-and about the line of WRIGHT HOISTS-TROLLEYS-CRANES-how they will fit into your current or future plans for more efficient material handling.



ASCO York, Pa., Chicago, Denver, Los Angeles, New York, Portland, San Francisco, Bridgeport, Conn.



WRIGHT HOIST DIVISION AMERICAN CHAIN & CABLE

In Business for Your Safety

HOISTS TROLLEYS CRANES

## Price Protection in a Declining Market

THE escalator clause and the "open end" contract calling for price at time of delivery have definitely gone into reverse. The emphasis on price protection has shifted to the buyer's side of the agreement.

This doesn't necessarily mean that prices are due to slide, though some softening is evident. It does reflect that fact that shorter lead times have relieved the manufacturer's hazard of encountering higher costs between the time he accepted an order and the time he completes and ships the product. Most important of all, it indicates that competition, rather than assured profit, is the motivating force in today's selling policy.

Here are some of the stipulations that a number of suppliers are willing to accept—if the purchasing agent insists:

- 1. Downward escalation. Seller agrees to pass along lower prices to the buyer if cost of materials or prevailing price levels drop after the order is accepted, before shipment.
- 2. Cancellation without penalty. Seller agrees to accept cancellation of an order, without penalty to the buyer, if the buyer can secure an equivalent product for a lower price than the contract calls for, and lower than the supplier himself is willing to meet.
- 3. Meeting competition. Seller agrees to adjust his price to meet a lower price quoted by "major competitors" at a future date, prior to shipment of the order, reserving the option of accepting cancellation instead.

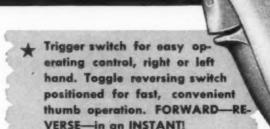
The new conditions do not make for price stability, any more than did the standard escalation clauses under which buyers were forced to commit themselves during and since the war period, and it is to be hoped that buyers' market privileges will not be abused. However, it behooves the purchasing man who does a competent job for his company, to safeguard his commitments in the light of new conditions and to keep himself well informed on what the current market offers in the way of better values.

Stuart F. Henritz

## Amazing, New BLACK & DECKER 3/8" Electric IMPACT WRENCH \$105.00

- ★ For SPEEDY running and removing of NUTS, BOLTS, CAP SCREWS, LAG SCREWS up to ¾" thread size.
- ★ Makes SHORT WORK of removing FROZEN, RUSTY nuts and bolts!
- ★ SAVES time and labor in Metal Fabricating; Assembly Lines; Engine and Machinery Rebuilding; Garages; Truck Fleets; General Maintenance; Railroads, etc.
- Weighs ONLY 8¼ lbs.—yet has DRIVING CAPACITY of conventional nut runner weighing almost 30 lbs.—a tremendous saving!
  - to hammer fasteners loose or drive them home—in a few seconds! (Free running speed: 1600 R. P. M.)
- Operator fatigue reduced to AMAZING MINIMUM . . .

  jarring
  twisting
  fighting the wrench
  - So WELL-BALANCED, operator can control Wrench by holding it lightly with one hand.



Famous full-powered B&D-built motor CAN'T BE STALLED—even when spindle is stopped dead—no danger of overload or burn-out!

IF you've ever "ridden" a heavy nut runner all day long, you know what a difference this light-weight, high-powered sturdy Impact Wrench makes in time-saving, fatigue-saving, cost-cutting! Ask your nearby Black & Decker Distributor for a demonstration. Write for free, descriptive literature to: The Black & Decker Mfg. Co., 664 Penna. Ave., Towson 4, Md.

Black & Decker



A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers



Back of the program for **Atomic Energy** is a vast and urgent construction schedule, and back of this gigantic building project is a purchasing organization charged with the job of having a wide variety of materials on hand where and when they are needed. Contrary to popular opinion, the

nation's atomic plant is still far from completion, and developments and changes are coming so rapidly that it's a major problem to keep abreast of the scientists. The procurement chore still calls for purchasing under pressure and round-the-clock operation. The story of this unique purchasing assignment appears on page 90, told by a man who has been on the job from Oak Ridge to the present Hanford project.

Economic changes bring about fundamental readjustments in the buyer's sources of supply. Loyalty to Suppliers, or stability in the customer relationship, may involve dollars-and-cents factors that can and must be considered as a purchasing problem. See page 119.

Purchasing agent readers have expressed unusual interest in the monthly review of business facts and figures entitled Where We Stand. In response to their demand, the section has been doubled in size and broadened in scope, starting with this issue. Turn to the insert section (page 123) for a graphic summary of significant business indicators, compiled for the purchasing man.

Materials Handling constitutes a factor of importance in the cost of operations, the cost of materials, and cost of storage. On behalf of purchasing men, our editors bring you the story of recently developed techniques and equipment shown at the Materials Handling Exposition in Phila-

delphia, and a digest of leading papers presented at that conference. The report contains a wealth of cost saving suggestions applicable to all types and all sizes of industrial plants. Turn to page 110.

Professional Development of purchasing is not confined to the western industrial world. There is a flourishing Association of purchasing officers across the sea, with twenty-two active branches covering the industrial centers of England, Scotland, and Wales. You will be interested in their program of activities, as reported in the article on page 131. Of particular interest is the educational plan for training of accredited buying personnel, coordinated with the national system of business and technical education.

The conflict of opinion as to the economics and effect of the ban on freight absorption by sellers continues unabated. Currently, three schools of thought exist, and are being given serious consideration by the law-makers. The reasoning to support the divergent views, and an analysis of one representative industrial area, are presented in an article on page 99, by our Washington editor—Who Pays the Freight?

Do you purchase **Cutting Oils?** For a practical discussion of this subject, and a guide to proper selection for most effective and economical performance, turn to the article on page 104.

Back Door Selling is with us again, as a part of the new competitive era in industrial merchandising. Buyers and sellers are asking themselves: Is it an evil? If so, is it a necessary evil? What can be done about it? On page 142, a management executive analyzes the practice,

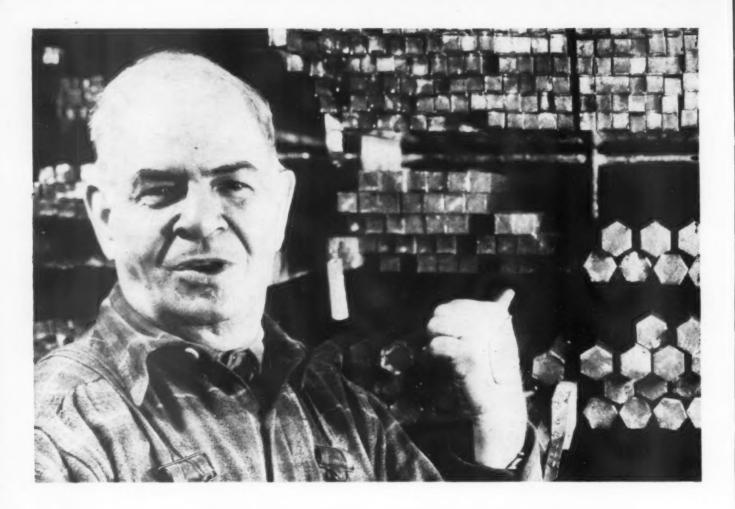
showing how specific company policies, with management backing, can help control it with justice to the eager supplier and without derogation of purchasing authority. A note from the purchasing agent of his company confirms the soundness of his conclusions.

Consolidated Procurement of military supplies for the various branches of the armed services is making headway, and a considerable number of items have already been assigned to particular buying offices, with centralized purchase of total requirements. A chart and directory of the new alignment appears on page 108.

Employment conditions and trends are one of the surest guides to production and the state of business. This key factor in the industrial situation is the subject of this month's Purchasing Opinion survey. Summary of the replies is tabulated on the insert, page 97. Compare your own observations and judgment.

Keep up to date on business law, for without a proper legal knowledge, the Innocent Must Suffer, as proved by the cases reported on page 145.

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new Trade Bulletins and Catalogs that are yours for the asking (page 12) and the illustrated summary of New Products and Ideas (page 150) will help you keep abreast of industrial progress.



### Sure, We've Got Steel, But . . .

Sure, we've got steel—tons of it. Many kinds and shapes, thousands of sizes.

But we've got trouble, too—and plenty of it! We haven't got enough of the particular kinds of steel that everybody seems to want. That's simply because more people want more steel these days than ever before.

We certainly wish there was more we could do about it. We *can* offer you many steel products such as stainless, alloys, mechanical tubing . . . ready to ship right now, though all sizes are not always available. And when we can't ship exactly what you want, we'll do our best to find something that will work out just as well.

On the hard-to-get items we may have to ask you to call again. But remember, our stocks turn over quickly. Kinds and sizes gone today may be here tomorrow. So, next time you need steel from stock, check your nearest Ryerson plant.

#### **Principal Products**

BARS—Carbon & alloy, hot rolled & cold finished

STRUCTURALS — Channels, angles, beams, etc.

TUBING—Seamless & welded mechanical & boiler tubes

STAINLESS—Allegheny metal plates, sheets, bars, etc.

PLATES—Sheared & U. M., Inland 4-Way Floor Plate

SHEETS—Hot & cold rolled, many types & coatings

MACHINERY & TOOLS—for metal working

Joseph T. Ryerson & Son, Inc. Plants: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco

## RYERSON STEEL

### What N. A. P. A. Means to Me

By C. G. McLaren

H UMAN nature being what it is, an elementary precept of sales psychology stresses the fact that the best approach is on the basis of self-interest of the prospect. In other words, how will I benefit?

So, in briefly evaluating what N.A.P.A. means to me, I approach the matter subjectively and from the self-interest motive. And, what I get has a direct bearing on the benefits accruing to my company.

I am an Oil Country Buyer.

Practically everything I buy is for company use and consumption. Few orders, if any, pass over my desk for material for manufacture or resale. Thus, since my interests are confined to the exploration, drilling and production of crude oil, there is a strong tendency to "get me in the groove", so to speak. I am apt to become provincial. Here is where the National Association of Purchasing Agents comes strongly into the picture. The broad range of the organization brings regularly to my desk for study a full and complete story of markets and business conditions throughout industry, compiled by top ranking purchasing executives, economists, and research agencies, and presented in a compact and convenient form. Added to this is a business library containing valuable reference books which are also furnished through the N.A.P.A. Thus I am able to broaden my perspective and more (Please turn to page 336)

C. G. McLaren is Area Purchasing Agent for the Shell Oil Company, at Tulsa, Oklahoma. A past President and National Director of the Tulsa Purchasing Agents Association, he is currently serving as Vice President of the National Association of Purchasing Agents, representing District No. 2. Coming within his jurisdiction are the Associations at Dallas, Fort Worth, Houston, Oklahoma City, Tampico, Rio Grande Valley, Texas Panhandle, Tulsa, and Wichita.

Analytical and studious by nature, Mr. McLaren has attended both the University of Texas and Tulsa University, in the schools of business and accounting. He also has had an extensive and diversified course in the school of practical experience. His first job with the Shell organization was as a roustabout, subsequently becoming production foreman and warehouseman in the oil fields of Texas, Oklahoma, and Arkansas, so that he is thoroughly familiar with the products and materials that he now buys. The transition from field work to administrative and management responsibilities came with transfer to the production department in Tulsa. He then served successively

as head of the Joint Venture Accounting Section and storekeeper for the Mid-Continent Area. In his present position he is in charge of purchasing and stores operations for the Tulsa Area.

In addition to his activities in the Tulsa Association and in the Oil Company Buyers Group of N.A.-P.A., he also served as Chairman of the Oil Industry Committee of the Tulsa Chamber of Commerce, and is an active worker in civic and church affairs. Mr. McLaren is married and has one daughter.



## Buying to Build for Atomic Energy

. By M. E. Ober

Procurement Manager Guy F. Atkinson Company and J. A. Jones Construction Co. Richland, Washington Centralized purchasing organization keeps construction work up to schedule.

Urgency of projects places purchasing under constant pressure.

Buying methods are adapted to engineering developments and government regulations.



One of the gigantic production plants at the Clinton Engineer Works, Oak Ridge, Tennessee, focal point of the Atomic Energy Project.

THIS is an article to relate some of the procurement features involved in the building of the fortress-like structure which is the Gaseous Diffusion Plant at Oak Ridge and likewise the expansion of the plutonium plants at Hanford, Washington. In the overall Atomic Energy Program, there are other purchase operations of equal importance but all have had a common form and a common burden. The procurement has been carried on under great urgency and yet the restrictions of a formal buying system enter every transaction.

This is also the typical story of the hundreds of purchasing agents who buy for general contractors and who, contrary to popular opinion, buy practically the same products as do the men who buy for the manufacturing industry. We think of the buyer for construction projects as interested in such commodities as cranes, brick, roofing, window sash and the like; and it is true these items may be his primary interest. Yet, it is also true he buys a full range of articles such as storage batteries, drills, reamers, wrenches, abrasives, fastenings, lubricants, etc., and these things he buys in large quantities, exactly as does the man buying for a manufacturer.

Not always, however, has this been the case. The writer can well remember some of the projects of the early twenties where, for example, a good portion of the buying was done by the Accounting Department. The project books, of course, would be audited to the penny, but the examination of a purchase transaction was unheard of; 80% of the business could go to one source of supply and the significance would escape us. This also saved on the

long distance phone bill, which was certainly a good thing—then.

For years the buying for large construction projects was apt to be handled by the architect, the superintendent, the bookkeeper, the warehouseman, etc., but to an ever increasing extent that buying is now being done by a purchasing agent. Today, practically all of the general contractors have organized buying departments of some description. The more forward-thinking firms even stress this in their sales literature as, each year, timely procurement becomes more and more the crux of every project. That has always been the case, but many in the line. The well-coined phrase that "A procurement dollar saved is a profit dollar made" had yet to be generally accepted, but construction management seemed to be sensing its implications. By the end of the Thirties, organized procurement in construction was being recognized throughout the industry.

The builders, who in 1943 set out to erect the structures which were to bring atomic energy and the bomb, were not unmindful of the vital part procurement would have to play. These firms had years previously "acknowledged" organized buying. As in a factory, the efforts of the various crafts can be sched-

One of the production areas of Hanford Works. where Plutonium is made from Uranium.

industry struggled with the problem rather than recognizing it. Time and again, construction management has gnashed its teeth over a procurement problem which would never have existed had there been a procurement organization to meet the problem in the first place.

It was the economic depression of the early thirties, however, which drove home to hundreds of general contractors the need for organized procurement. Many materials and equipment were difficult to procure during that period. Deliveries could be slow and prices could be out of uled almost to the hour, but the actual work cannot be performed until the material and equipment are available. That statement is simple and trite but ever basic. It has been so well recognized by these builders that there has never been any restriction on the limits of the procurement organization, nor has there ever been any doubt as to the scope of the effort. Management delegated full authority, and there has been no interference. It was expected the procurement would be adequately organized, and there has been no change in that thinking.

It was soon apparent the buying would have to be conducted in an almost perpetual state of hysteria and that it would be the odd transaction which would not be handled on an accelerated basis. Design might be delayed for months but end dates for operation had to be met. Urgency has not come in cycles nor has it been selective; it is ever present

#### Procurement Under Pressure

This continual state of hysteria and emergency might lead the uninformed to consider such a condition as being indicative of mismanagement or that those in authority did not know their business. Yet here is hidden the great problem-producer and the one factor which makes urgency prevail.

The situation has been comparable to a demand that the inventions of 1975 come to us in 1950. As has been pointed out in the public press, all material progress has had its normal stages of development-except Atomic Energy. The nuclear physicist has here been an inventor, and vet an inventor can invent only so fast. Develop his invention as speedily as we may, it is always late. Though the designers and engineers detail the invention with great haste, it is still not fast enough. Let them perform miracles, the need grows more acute.

Since tomorrow's development must be here today, there can be no deliberate thinking which points to a scheduled plan of action. Normal or near normal time elements for engineering, procurement and erection are tossed aside. We can excel only as we *immediately* convert the inventor's dream to concrete accomplishment. The ingredient which brings desperation is inherent.

So it is that the very hour drawings come off the designer's board, a structure has long since been needed and the spotlight is at once turned on procurement.

#### Formality Provides Proof

But while procurement under pressure may present difficulties, it becomes something of a problem when we remember it is taxpayers' money which is being spent and which must be accounted for. To have purchase transactions which you know are "clean" and fair is one thing, yet to have transactions which can be proven as fair and clean is a little more bothersome. This requirement has caused us to introduce a high degree of formal buying and induces a system where-

AMETRACY AND TABLEATION	N OF BIDE FOR COMPLENSON	GUY F ATKINSON CO		BATE CLE		
FOR FEATURE	METHOD OF DETAIN	1 041	2	3 Resurent	4	5
THE GRANTITY UNIT	ARTICLES AND OF SERVICES					
	M.	T AMOUNT MARKET LINET	AMOUNT MACE	AMOUNT NEED AND	AMOUNT TO A	MOUNT.
	*0.4	1.4.101				
			NES CONSTRUCTION		-	
EMATION	and the second s		SCHEDULE FOR FORM	O 3 INGUIRY NO	=	
MANAGERAL ERCIGE TAR INCLUDED IT		CANTITY UNIT	ARTICLES AND/OR SERV	CES UNIT PRICE	AMOUNT	
OTAL MOUNT OF AWARD						
	100 10 TO	*0 >				
		J	A JONES CON	STRUCTION CO, I	INC. (Buyer)	
	AL ALIA MAD LANGUEST		CLINTO	H BHGINEER WORKS	SECUTIVE OF	ric sa
M & CETTING CO. 6 / A JOHN	de Aure Bable Connecti. 1 — CA o no regionalmente Auro 1 — CA arcine de tind resoucht Auro 4 — 6.1 8 Connectification CO			DAR RIDGE TENNESSEE	CHARLOTTE CORTH CAROL	
				FOR QUOTATION (BE		
BIP 70: U. S. APOSIC ENBIGT C	THE PARTY OF THE P	REQUISITION No. CODE No. TERMS	-	CLES AND/OR SERVICES	UNIT AMOU	_
	ALL SHIPMENTS MUST BE PREPAI	P P O. B.		Salas Tax	of or, occ. stir fade at L- is and to	7 3/8/0
AUTHORISM TO SOTER TRUE O	BID AND/OR PROPOSAL BATES BOSE AND TO PROCESS TO PURINES THE POLLOWING:	70	V ARE BEREWITE			
TEM QUANTITY UNI	T ARTICLES OR SERVICES	UNIT	AMOUNT			
						2
	ACCEPTANCE	COPY				
	return t		- 1			
	PURCHASE	K			ared only at the discretion of the buye Weight [1] Terms of Payment [4] N I CONSIDERED UNLESS THIS INFOR	
			-		CONSIDERED UNLESS THIS INFO	RMATION
				QUOTATION (SED)	DATE	- Carrier
				furnish and or all of the terms upo	n which prices are quoted at the pric	ca nel ap
	LA				.4009498	
	IA			200.0	. A DOM: 02:	
Upon your assumance or partie	mones bereef, this order shall constitute an infurmal	contract between on the terms of		717L0		
are set forth as both sides heres	f and in the appendices, if any, standed herets.					
Ripment Heat Start By:		J. A. JONES CONSTRUCT				
MPORTANT: See reverse side	of this above		Perdude April			1
ACCEPTED:				Purchasing	forms and proce	dure

by awards will stand up under audit. The taxpayer may have visions of his money being grossly squandered, and while no undertaking of this magnitude could be without some inefficiency, yet any leaks through procurement would be negligible. All of the management companies who have contributed to this effort have, to assure honest buying, gone to greater extremes than any taxpayer ever would in spending his own money.

The procurement regulations laid down by the Government have been similar to all cost-plus-fixed-fee work and can be summed up in a few lines, to wit: Every transaction must be clean and free from favoritism; it must withstand critical audit by experts; bids must be from bonafide sources of supply; and there is no "tinkering" with awards. Approval by contracting officers or other representatives of the U. S. Government will relieve no one from the responsibility for fair dealing.

The paradox between extreme urgency and the restrictions of formal buying prompted us to draw up a separate manual of policy and procedure. Some of this logical contradiction is reflected in the preface to this manual, which reads as fol-

lows:

#### CPFF Procurement Policy and Procedure

1. The purpose of this manual is to set out the minimum standards under which we must buy as compared to the practice of those buying for a lump sum or flat price operation. Whereas the flat price contractor is free to place an order with little or no competition, by negotiation or even on sentiment, etc., the cost plus contractor must "buy" his requirements.

2. The purpose of the Company's Client insisting that the buying procedure be uniform and completely free from favoritism is to prevent misuse of Government funds; to eliminate the poor buying which inevitably results when there are no restrictions; and to assure fairness in awards and all dealing. The requirements of such a policy are neither complicated nor impractical. On the contrary, the work can move with a precision unattainable in any other way, once the routine is mastered.

3. Objections to the policy cannot be apported by the hysteria "there isn't supported by the hysteria "there isn't time." The time required to buy under these standards need not be excessive but we must take the minimum time if there is to be full and immediate reimbursement, and reimbursement that cannot be recaptured. Hasty and ill-thought-out commitments can have a boomerang effect which can be very expensive, and with the loss being deducted from the Com-pany's fee. Moreover, "doing it right" in the first place will, in the long run, speed the procurement function; whereas any haphazard, "slam bang" effort will greatly reduce the total number of transactions a buying group can process.

4. To disregard the rules of fair dealing inevitably leads to the evils of collusion and the ills of reciprocity and to excessive costs for which there is no corresponding benefit. It wastes our clients' money. What is worse, we injure our own reputation for integrity and that injury stays with us long after the project is forgotten. Years afterward it will turn up to the embarrassment of both the Company and the individual.

5. In addition to the considerations which make for economy, our procedure must also recognize and provide for the requirements of the construction, both as to progress and quality. We must never lose sight of the fact an accelerated construction schedule is the best schedule, and that there can never be any compromise with the quality of the work. In every action, in every decision, our procurement must be correlated with these two factors. Not only must we be honest, we must also be efficient.

6. As the A.E.C. procurement regulations develop, we will, from time to time, add to and supplement the manual with a more detailed procedure. If there are any points about the various sections that are not fully understood, please discuss the matter at once with the undersigned.

#### Competitive Bidding Required

Of lesser importance but still adding to the overall problem has been the almost complete elimination of direct negotiation. The demand for speed may be unprecedented, yet any purchase by negotiation on competitive articles is ruled out. Only in the most extreme emergency has it ever been entertained. In the millions which have been spent there has been practically no instance where competition, if obtainable, has

been dispensed with.

Another factor affecting the procurement has been the low figure set for the "small" order. Not only is competition required irrespective of how urgent the need, it is also a requisite down to an extremely low money limit. In the building industry generally, any order placed without competition is classed as a "small" order. Not that it necessarily is small in amount of money, but rather that there is an award without competition. The various contractors usually set money limits above which competition is to be sought, but below which the buver has the authority to commit on value alone. It is not unusual for this limit to be set as high as \$10,000, and the smaller and well integrated contractors may go above that. The average construction purchasing agent has simple methods of keeping abreast of market prices and there is little danger in the practice. It is not a method whereby every possible procurement saving can be effected, but it adds to the number of transactions which can be processed in a hurry. On these Atomic projects, however, the top limit for the "small" order is set at \$100. While this regulation has been burdensome at times, looseness would be almost sure to creep in were it otherwise. To have to dig up three bids before awarding an air tool worth only \$110 has hurt, but it is hard to see how the regulation could be lifted.

All this means every competitive transaction over \$100 has to be supported by written bids. Oral transactions have been acceptable but the confirming quotations of all bidders, especially those who are unsuccessful must not "upset" the award when audit is later made.

These factors of speed, formal bidding, restricted negotiation, supercritical audit, etc., mean that every buyer must bat 1.000, but he must do it day in and day out. The Government can recognize neither error or the human element.

These various factors point up the necessity for comprehensive and fully comparable bids, and it has been made standard practice to use a simple style of formal inquiry where ever possible. We adhere to the old axiom that the foundation to good and timely procurement is a good and comprehensive inquiry. The inquiry form exhibited here is neither new nor novel but the unique thing is that this type of inquiry can produce results irrespective of how strong may be the element of urgency. It might be supposed that any reasonably complete bid would suffice, yet there is still no appreciable delay in having the bidders take all conditions into consideration and so state on a formal inquiry—whereas they are almost sure to omit some stipulation when bidding on their own forms or letterheads.

#### Standard Methods

Our form for abstracting the pertinent information from bids, making the comparison and agreeing on award likewise follows the "stand-

ard" procedure.

The purchase order form also is orthodox-more comprehensive than some perhaps, yet typical of thousands of others used in the commercial world. The usual features of "acceptance" copy, compendious general conditions printed on the reverse side, special form for continuation pages, arrangement for reproduction of copies by liquid duplicator, etc., are provided.

It goes without saying that with time ever of the essence, many expedients have been resorted to and many short cuts brought into play.



Lumber yard at the Hanford project. This is a night-and-day operation, handling large quantities of lumber for housing, concrete forms, and miscellaneous uses.

In practice, we have contrived to put many of these expedients on some formal basis. When urgency has forced us to divert from orthodox procedure there could still be no arbitrary action nor relief from securing genuine bids.

One of the most common situations has been where drawings and specification are non-existent, and yet it has been vital that any normal time element for bidding, analysis and award be eliminated entirely. The measure taken, as many others have done, is to proceed with drawings and spec of some existing structure which is believed to be typical of the eventual requirement. Unit prices are taken and an award made on the basis of the typical requirement. At times this has been comparable to taking bids and making an award on Penn Station, with a Grand Central being eventually delivered. The design used for bidding and the actual design will differ in detail, yet with the structures remaining in the "same general character and proportion" the range of bidding is excellent and there is sound basis for the award. By intelligent selection of the spec and drawings for bidding purposes, the points of difference will be but a minor percentage of the amount involved and the final adjustment will be negligible. This measure has inherent weakness and is distasteful, but it can assure a source of supply in advance of the time drawings are ready and without risk of excessive extras.

Another common expedient, in which we have all indulged, has

been the purchase of critical raw material or eventual shipment to fabricators, which is not too easily accomplished when the design is still nebulous. You can, for example, buy hundreds of tons of 22 gauge steel sheet only to have it later develop the requirement is for a much heavier gauge. Sizes can likewise be wrong where there is "guestimating" on eventual design. Only by securing the fullest cooperation of the mills can a mis-step be avoided.

In connection with the purchase of many thousands of tons of structural steel we have, like everyone else, substituted shapes more readily available for those specified, and we have at times done this on a "wholesale" basis. To be sure of maintaining the technical position of our contract we have made it a practice to buy this type of material on a unit price rather than a lump sum basis.

During the war one of the most helpful expedients came from engineering and was the decision to keep to a minimum the variety of steel shapes to be introduced into the design of a structure. This selfimposed simplification would time and again allow our fabricators to get into production without waiting for a full cycle of mill rollings.

There has been another sort of expedient where orders have been placed with the full realization that the suppliers might not be allowed to finish them—that, if the construction proceeded on schedule, project transportation would be dispatched to the point of manufacture and all components, irrespective of the state of production, would be

brought to the project in order that a greater number of mechanics could finish the normal factory assembly. The biggest problem here was to convince the manufacturer there was no displeasure and that the progress he had made, even though not complete, was truly appreciated.

#### Volume and Variety

Much has been written about the large quantities of material purchased for these Atomic projects, and it is true that individual orders have drained a manufacturer's full production for weeks and, in some instances, for many months. There is no denying that a few of the transactions have had the effect of "cornering" the market.

Sensational as this may sound, the excessively large volume buying of a few commodities has never presented much of a problem compared to the buying of an excessively wide range of commodities. From the articles of precision and the many structural, mechanical, electrical and architectural components down to cattle hair for plaster and pigs feet for the cafeterias, the construction project will demand an endless list of commodities as does a large industrial operation.

To better understand this, it must be pointed out the larger construction projects embrace many separate operations, or as the manufacturing people term it-an operation within an operation. The operation of building the permanent structures is aided by supplemental operations such as machine shop, carpenters mill, structural steel fabricating plant, plate shop, sheet metal shop. concrete mixing plants, aggregate plants, usually a small railroad. sometimes a small marine operation. and practically always a trucking and transportation service and earth moving group. It is in the acquisition, operation, repair and maintenance of these supplementary endeavors that the buying widens far afield from the brick, paint, and window sash.

The project shops are for making only the article which cannot be procured in any other way or within the time allowed. Concrete forms, for example, usually have to be made on the project and only for certain applications is it feasible to buy them. Some perspective of this buying for the supplementary operation can be gained by observing the picture of one of the Hanford lumber yards.

To further illustrate this buying for the supplementary operation is the view from the air of the North Richland construction camp which houses many of the construction workmen and their families. Not only does this supplementary operation involve the buying for a huge housing project, it also includes the buying of material and equipment for hospital, stores, theater, office buildings, restaurants, cafeteria, etc. Yet the buying of the commodities for this operation is still only a minor part of the overall procurement.

Returning to the principal operation, no account of this buying effort would be complete without mentioning the never ending changes and cancellations which come when the inventor cannot invent to an impossible schedule. Undoubtedly, there are hundreds of suppliers who have wondered if it could be possible they have been the target in the cold war and the earlier war of nerves. For repeatedly there have been weeks when the dollar value of orders cancelled would exceed the dollar value of the commitments, and there have been other weeks when the changes would exceed the number of orders placed. And, it has not been uncommon to place a half-million dollar order for an item in short supply and, after convincing the supplier on the "urgent need" aspect, to turn right around and effect cancellation iust as he was about to get into full production. Back of the cancellation would be a laboratory experiment indicating the "best laid plan" would have to be adjusted. Heart-breaking for everyone, yet treason not to have tried.

Let it also be brought out our problems have not always been associated with either the large volume, the wide list, the special requirement, or even the confusion of endless revision. As every buyer has at some time experienced, the supposedly insignificant item such as a common "bread and butter" electrical fitting or the "garden" variety of duplicator paper would be the gremlin holding up the parade. Once in December of '43 it was a couple of second-hand barber chairs, the lack of which was making several thousand scarce mechanics rather irritable.

#### Cooperation Meets Schedules

On projects of this magnitude, considerable attention is given to the coordination of delivery dates with the time of erection or installation. This can result in considerable high-pressuring and expediting of suppliers. On this matter, there has

been a strict policy of trying never to ask for something merely to meet a date. The fact that a supplier missed a promise has been of no consequence unless it would actually delay the eventual use of the structure involved. This is not to say that production and manufacture of critical material has not been followed closely, but the plea of urgency has never been used without a recheck of actual need being made. We cannot help but believe this attitude makes for considerable goodwill, and it is the mixture of goodwill and genuine need which moves a supplier to rearrange his produc-

It has also been our practice to keep the follow-up closely integrated with the buying-an endeavor for which the individual buyers must share the responsibility. It is rather foolish for the follow-up people to "slug it out" with a manufacturer when the same results can be had by "unhooking" the order and turning to another source. Holding a vendor's feet to the fire may have its place but allowing him to back out gracefully from an impossible position is sometimes better in a long range program. But whatever the circumstance, we have always found that when buyer and expeditor team up together the best results are ob-

Again, no account of this procurement should fail to mention that it is ever to the credit of the American Manufacturer that no effort is ever too great where the need is genuine There have been perhaps a handful who might think in terms of "old" customers or ask, "What's the Navy going to do if we give your project three months of our production?" Yet many others would always come forward to help.

There is distinct remembrance of an instance where a fairly large structure was ready to roof and it was discovered no roof had been requisitioned. But thanks to another American Manufacturer, carloads of special roof were en route the following day. It was made available to us on faith, and not because there was any knowledge of contributing to the discovery of the century

In summation, it should be emphasized that in this spending of millions it has been orthodox procurement methods which have paid off. Except for volume and possibly more intense application, it has been little different from the sound routine advocated by all experienced buyers. Any wizardry or magic wand approach would have only brought confusion.

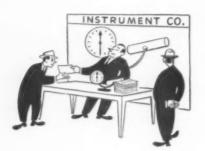
Since the structures stand for themselves, let every buyer, whether he buys for construction or manufacturing, have faith in his belief there is no substitute for knowledge of materials, knowledge of sources, good inquiries, fair dealing, and common sense. Common sense, the thing we sometimes refer to as Management, is the most important of these. It is the vital element which American industry brings to Atomic Energy.

Incidental to the plant construction are such responsibilities as providing housing facilities for workers and their families. This development is an adjunct to the Hanford Works, complete with stores, schools, theater, utilities. A sizable construction job in itself, it is only a minor part of the project as a whole.



## Trade Literature that Misses the Mark

By W. F. Schaphorst



The purpose of trade literature is to give information in understandable form.

Usually it is the language, not the product, that is too technical.

We can't all be experts on everything, but we can learn.

WHILE at a prominent indus-trial exposition not very long ago, this writer was impressed by a certain exhibit that pertained to testing equipment. The particular kind of equipment is not important, and will not be mentioned here because it is not the writer's desire to involve anybody.

Testing is not directly a part of my work at the present time, though I am directly concerned and had considerable to do with it some years ago. In fact, at one time I frankly considered myself a "shark" at the subject, and at present I have a sincere desire to be better acquainted with recent developments and what is going on in the field.

The exhibit was not entirely clear to me, but not wishing to display utter ignorance, I did not ask very many questions. I did ask a few, which the salesman in attendance answered. However, nearly everything the salesman said about his equipment was "over my head", and I was not much the wiser at the end of our conversation. Still interested, I concluded the interview by picking up two of the printed leaflets from the exhibit table, for further study.

Since that time, I have had an opportunity to read the folders and have spent considerable time in carefully studying their contents. Unfortunately, however, the equipment still remains un-understood so far as I am concerned. The folders sound as though they were written by somebody who knows all about the machines and all about that type of testing. The information is probably there; I have no criticism on that score. But evidently he feels that we prospective purchasers

ought to know more about the subject than we really do. written at his own level of information, not at ours. Perhaps he didn't start back far enough; at any rate, I have never been able to catch up

with his train of thought.

A great many catalogs, bulletins, folders-the whole range of "trade literature" and even some personal letters in response to a request for information are like that. They are "very well written", and are doubt-less understandable by one who is an expert on the subject. But most of us are not experts in that certain type of testing, or on hundreds of other specialty products in many fields, and we are the audience to which such literature is addressed.

Writers on technical subjects should learn that they must come down to earth if they really want to teach others by imparting information about their products. There are few things that cannot be made clear in writing if the writer will take the trouble to put himself in the reader's position, and that doesn't necessarily mean using words of only one syllable.

So, as a result of my frustrated inquiry at the exhibition, a letter was written several weeks ago to the manufacturers of this special machine, asking for a further explanation. To date, no reply has been received. Perhaps this company has come to the conclusion that 1 am "too dumb" to bother with—so woefully ignorant of the subject that I could not possibly be influential in the purchase of one or more of their machines. As a matter of fact, this writer was once a so-called "Professor of Testing" at an engineering college, but he is perfectly

willing to admit that he doesn't "know it all" and is eager to learn.

Technical men, who are generally so close to their product that they know all about it in the most minute detail, do not always realize that purchasing men are frequently called upon to make investigations into subjects on which they have had no previous occasion to become well informed, and about which their own plant and company executives themselves know practically nothing. That is why these "foolish questions" are asked and the printed information requested. This has happened to the writer again and again. What is more logical in such a situation than to turn to the manufacturer for assistance that will really lead to a practical understanding, and that can be passed along for consideration in terms of its application to the problem in hand? And what greater opportunity has the manufacturer to establish a favor-able business relationship? The exhibit of his products is merely an entering wedge, attracting attention and stimulating interest. The real selling job must be based on mutual understanding. It involves the man as well as the machine.

There is so much to be known about the thousands of products and machines used in industry today that no one man can possibly master all of it. As stated so aptly by the late great Thomas A. Edison, do not know one millionth of 1% of anything." It surely is no disgrace to say, in instances like the above, "I don't know; tell me

The wise manufacturer will try to provide the answers, in language that the inquirer can understand.

17%

25%

2%

## What's Back of the Present EMPLOYMENT SITUATION?

Behind the mounting unemployment being reported for the past few months are factors that will have an important bearing on the course of business during 1949 and after. The current state of employment in industry, its background and future prospects, form the basis for this month's questionnaire. The combined opinions of a cross-section of purchasing agents throughout the country are shown below.

4th QUARTER 1949 -

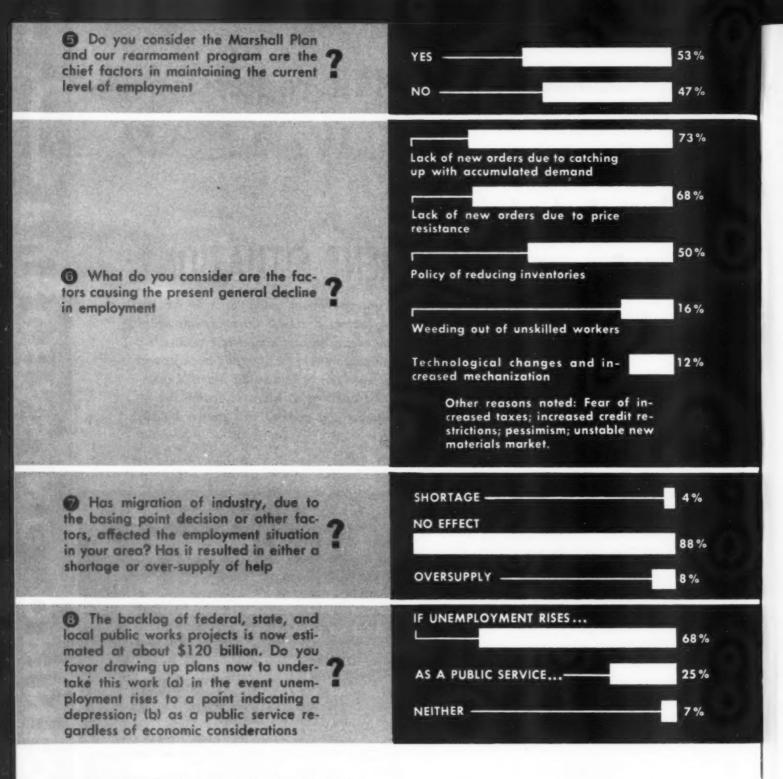
1st QUARTER 1950 -

END OF 1950 -

1951 OR AFTER -

HIGHER . 1 Is employment in your industry 40% ABOUT SAME higher, at about the same level, or lower than the average of the past two years LOWER -51% GREATER EMPLOYMENT -2 From present indications in your industry, do you expect greater employ-62% ment, no substantial change, or more NO SUBSTANTIAL CHANGE layoffs in 1949 MORE LAYOFFS -29% TEMPORARY PHASE 14% 3 Do you consider that present unemployment conditions are a temporary phase, or the adjustment to a stable 86% postwar employment level ADJUSTMENT TO STABLE LEVEL 2nd QUARTER 1949 18% 3rd QUARTER 1949 28%

4 If your answer is (b), how soon do ? you think a stable level will be reached?



#### WHAT THEY SAY

"Employee-employer relationship is extremely low and discourages companies from retaining services of employees during curtailed production. Hence, layoffs increase as soon as production is the least curtailed.

"With regard to Question 4 - who can tell what is normal for postwar? If you people find out, please tell me and 20 million others."

"Regard high living costs plus income tax rates as causes of a drying up of consumer purchasing."

"Think all businesses are not using proper basis for comparison. Most business by comparison with war volume is naturally down, and therefore there are complaints of 'poor' business.'

"Most dangerous factor in present conditions is the weeping and wailing of business men that we are headed for a crash - despite the fact that most of the inflation elements are still in existence.

"Government should assist private enterprise in every way possible without itself getting into business."

WHILE it may be shown that some of the trade practices that developed during the period of rapid growth of American industry were faulty and conducive toward monopoly, it is even more apparent that an overnight change in basic business practices can be an explosive bombshell, forcing industry to travel a completely uncharted

The action by the Supreme Court in questioning the legality of establishing prices through a system of basing points was such a bombshell.

Full effects of this decision have not been felt-have, in fact, been warded off by the existence of a

strong seller's market.

These very conditions make it opportune to iron out at this time the rules applying to freight absorption. There is a general rush to provide such clarification through legislation. The facts are these:

1. Supreme Court decision was to the effect that where the practice of freight absorption was for the purpose of fixing prices, such conspiracy was illegal. This was nothing new. However, at the same time, the Court injected the premise that if you follow the identical practice of a competitor, such a course indicates you must know what he is doing and what he plans to do.

2. This ruling was followed by a decision of steel producers to sell on a mill net price-instead of on the historic basing point pattern.

3. As an aftermath, a series of unlooked for developments appeared to be shaping up. Processors of steel located in geographic areas where a considerable price increase would result if they had to pay the freight bill, made inquiries concerning plant sites closer to Pittsburgh. There was some renewed activity looking toward a dispersal of heavy industry-a decentralization of production in the West and South; but these instances were few and faint.

4. Congress began a series of public hearings looking toward Congressional clarification of the law as it applies to freight absorption. Senator Edwin C. Johnson, Demo-crat, of Colorado, Chairman of the Trade Policies Subcommittee of the Senate Interstate and Foreign Commerce Committee, introduced a bill in the Senate to "probihit the re-quiring of the sale of products at f.o.b. factory or mill prices, where buyer or seller do not choose to transact business on such terms"

During public hearings on this bill, the preponderance of opinion by business and industrial spokes-

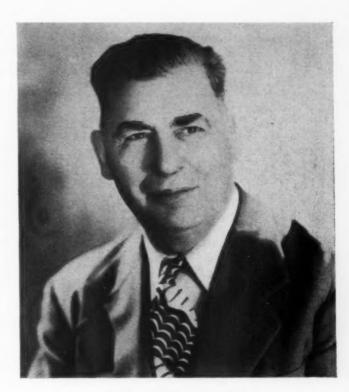
## Who Pays the Freight?

Practical economics of the controversy on freight absorption.

Three divergent viewpoints leave question still a matter of opinion and argument.

Problems of monopoly, discrimination, cost and decentralization are involved.

By A. N. Wecksler



Senator Edwin C. Johnson Chairman of the Subcommittee on Trade Policies, Senate Committee on Interstate and Foreign Commerce

men favored clarification of the law to permit freight absorption in pricing if the seller wishes to do soand also assurance that the mere knowledge that a competitor is following the same practice in establishing prices should not be held as evidence of either collusion, restraint of trade or conspiracy.

#### Three Viewpoints

There are roughly three positions in the freight absorption controver-

sy. The first-that taken by industry-is that the laws governing trade should be clarified substantially to permit any method of pricing which the seller prefers, provided this is done under free market conditions.

The second is that taken by spokesmen of the Federal Trade Commission, who indicate that the ruling of the Supreme Court did not basically change conditionsthat the high court ruling did not mean that basing point pricing, or

# IMPACT OF F.O.B. MILL PRICING ON A REPRESENTATIVE INDUSTRIAL AREA Report by Cleveland Chamber of Commerce, to Senate Committee Questionnaire

TO CLEVELAND

FROM CLEVELAND

LOCAL SOURCES POTENTIAL

LOCAL MARKET POTENTIAL

ANTICIPATED MIGRATION OF INDUSTRY

suppos	e that	the co	mplete	definitely elimina naterials	tion of	freigh	t absor	ption p	ries wil oractices	l move would	to C result	levela t in ti	nd, I	It is oving	of of	nable to industrie:

suppose that t	o to state definitely that one complete elimination of when their materials are in	freight absorption	on practices	I move to C would result	leveland.	It is reasonable to naving of industries
	*					
*	T.					
unable to sell to we have been substantial partition partition for example, we probable that	ow of any industries which their normal production in to informed, however, by to fultimate delivered cost al or complete absorption could force them sharply to some processors of materia sources of presently surplus	he area or becau the executive he is of their produc of freight charges o curtail the volu ls, of which Clev	ads of cert its, that the as they ex	ain industries complete elir ist under the	mination of multiple land	freight costs are a process basing point system, and. We regard it as
materials in C	ubstantial number of Cleve leveland, but other industr b. We regard it as impossi f their raw materials here	es in exactly the	other than	theoretically	what indu	stries could possibly
the Cleveland theoretically p a deficit area	matter, not one of the cl area. Some individual pro- assible that the food indus- for processed foods. The for- ind industry sells all of its p	ducers can and try could dispose ces of normal co	do dispose	or all or m	eir produi	secause Cleveland is
The major raw materials used in the production of basic iron and steel praducts have long been purchased on an f.o.b. origin basis. Ore quotations f.o.b. lower lake parts are in fact the mine prices plus rail and water freight, and have no significance so far as cast to the consumer is concerned.	Cleveland has been a base	and write under the multiplie basing point system, the quotation of base paint prices has not meant that Cleveland consumers are granted a lower price than under an f.o.b. origin basis. It is true that the multiple base system has enabled cleveland consumers to purchase their materials from producers not located in Cleveland or at the near-	est base point at prices less than would have resulted had the autotation been fo.b. mill plus full freight costs. Aany of the raw materials used in these classifications do not consist of basic iron and steel products, and	these are purchased on varying terms.		
of the ince this ost,	has all,		nak- pars. ness nany	and the eans es a	bar.	the the rolly really of or tino.

PRICING BASIS FOR PURCHASED RAW MATERIALS	The major raw materials used in production of basic iron and steel products have long been purchased on fo.b. origin basis. Ore quotations to prices plus rail and water freight, a prices plus rail and water freight, a have no significance so far as cost the consumer is concerned.	As Cleveland has been a base production of the many basic iron and steel production and wire under the multiple base point system, the quotation of basic point prices has not meant that Cle land consumers are granted a laying price than under an fire, b. origin but it is true that the multiple base systems enabled Cleveland consumers burchase their materials from product not located in Cleveland or at the new resulted had the quotation beave resulted had the quotation for, mill plus full frieight costs. Many of the row materials used these classifications do not consist these classifications do not consist bease paint.							
PRICING BASIS USED IN SALES	It has been the traditional practice of the iron and steel industry of Cleveland, as elsewhere, to sell its products on the multiple basing point principle. Since the decision in the Cement Case, this practice has been abandoned almost, if not quite, universally.	The multiple basing point system has been used in selling most, but not all, of these commedities. Many sales have been and are being made at prices fo.b. origin, fo.b. destination, or with an allowance of a sufficient part of the freight charge to equalize with more advantageously located competition.	Every conceivable method of price-making and freight allowance appears.  Keen competition in the export business on machine tools has resulted in audia tion of f.o.b. New York prices in many instances. Many household appliances are sold at a fixed national price, and a purchaser in Cleveland will pay the same price as a buyer in New Orleans on San francisco. In some instances a zone system exists, with an addition to the price west of the Rocky Mauntains. Pricing systems are varied to meet particular circumstances.	Motor vehicles are uniformly sold at Cleveland price; customer pays the freight. Replacement parts are generally sold on a fixed national price; manufacturer absorbs freight costs. Original equipment parts are sold usually at Cleveland price plus freight to destination, but there are numerous cases where Cleveland producer absorbs freight casts to meet more advantageously located competition.					
PERCENTAGE OF TOTAL INDUSTRY	%91	12.7%	12.2%	9.6%					
				1					

Machinery, Tools and Appliances

(Basic steel & blast furnace products)

MAJOR CLEVELAND INDUSTRIES

Iron and Steel Products (Bolts, nuts, forgings, castings, hard-ware, stampings, enameled prod-ucts, etc.)

Motor Vehicles and Parts

freight absorption, were in them-

selves illegal practices.

In any event, the position of the Federal Trade Commission appears to be that whatever changes may be made, the law should not be made too specific. The effort seems to be aimed at keeping as much power of decision on pricing methods in the Commission—so that the Commission could determine just at what point companies or industries can be considered as verging on conspiracy.

Finally, there is the third point of view—that held by certain farm group spokesmen, who flatly take the position that freight absorption is a monopolistic practice, and that it should be sharply curbed.

In a careful study of the three positions, it is apparent that the industry position is the most rational. The Government administrators take the position that they will use their high office in a fair and impartial manner and do what is best for industry. The farm groups take the flat position that monopoly is bad, and anything that adversely affects the present pattern of industry must as a matter of course be anti-monopoly.

Industry spokesmen agree that the only pricing method which is wholly beyond any suspicion of discrimination against, or favoritism toward particular buyers is mill net pricing. At the same time, such a practice, if forced universally on industry, would not eliminate monopolistic trends, but would create a series of local monopolies, and give rise to a mad scramble by industries to tap certain lucrative markets and to ignore other more remote markets.

#### **Problem of Small Business**

The Government approach toward curbing or controlling freight absorption has been presented under the guise that such action will retard monopoly and protect small business. This question of the effect on small business was cited in the brief presented by the Cleveland Chamber of Commerce. The Cleveland brief

points out that:

"As a practical matter it seems obvious to us that the larger the business the easier it can meet the conditions of competition which would exist under universal mill-pricing. Small businesses do not have widely scattered producing points at which they may establish prices without freight absorptions. They are not able to choose between sources of raw materials even today and, under strict mill-pricing by

their suppliers, they would be even more restricted.

"If a one-location industry were to undertake to enter a wider field for the distribution of its products, being prohibited from meeting known competition by systematic freight absorptions, the difficulty of making individual price adjustments would be beyond its capacity. We have learned that Government regulations aimed at controlling the large and powerful, result in a relatively greater load of overhead to the small than to the large business.

"Cleveland is a community of predominantly small business. We find no desire among Cleveland business men for the possible protections which the elimination of freight equalizations is supposed to bring about. This is doubtless due to two factors: first, our people do not believe that there are any substantial advantages to be gained; and, second, they are willing to meet fair and open competition in the Cleveland market and desire to engage in that same competition wherever they find it possible."

#### **Industry Decentralization**

Another approach taken by Government spokesmen who favor curbing freight absorption practices, is that there is a need for further decentralization of industry, and by the forcing of mill net pricing, basic industry would move close to regionally located processing industries.

Industry spokesmen have taken the position that strict requirement of mill net pricing would result in some decentralization of industry, but would lead in many instances to undue concentration of industry.

In the testimony before the Senate subcommittee, the picture drawn of the possible aftermath of a national conversion to a mill net pricing method is that when a predominantly buyer's market develops, some producers would garner a windfall in that their competitive position would be enhanced if they happened to be located close to both the major source of their bulk raw material and to their major consuming market.

#### Clarifying the Law

Other producers would have to attempt to equalize this new competitive factor by economies in production or labor costs, by relocating their facilities—or failing any of these, be forced out of business.

The Federal Trade Commission spokesmen who appeared before the

Senate subcommittee admitted the possible need for legislative clarification, but countered with the argument that any change in the law should not give blanket sanction to price allowances which tended to create national pricing patterns. The argument against such blanket price approvals ran as follows:

"It is well-recognized by the courts that conspiracy can seldom be proved by direct evidence. It is also a well-recognized principle of law that an act harmless when done by one may become a public wrong when done by many acting in concert. Under the above interpretation of the proposed section, however, the Commission would be precluded from considering as an element of the proof of collusion the action of a seller in charging uniform delivered prices everywhere. in charging uniform delivered prices within any geographical zone or in charging similar or identical delivered prices as the result of the absorption, allowance or averaging of transportation charges. It seems obvious that in many instances the existence of identical delivered prices achieved through the use of one or more of these methods would of itself be persuasive evidence of the existence of an agreement."

One Federal Trade Commission

One Federal Trade Commission spokesman made an important point concerning one of the major sore spots in the laws governing trade and monopoly. His point was that the laws against conspiracy and price fixing agreement should be applied separately from those governing price discrimination. This spokes-

man pointed out:

"I believe that the laws against conspiracies and price fixing agreements should be applied and enforced as distinct from the laws against price discrimination, and that freight absorption should not be outlawed because it may be used as an instrument for price fixing. One should not be charged with being a friend of conspiracy or monopoly because he believes that all the instruments and means used in effectuating conspiracies should not necessarily be prohibited by law."

Viewpoint expressed by farm organization spokesman is summarized in one of the briefs presented before the Senate subcommittee, as fol-

lows:

"The Farmers Union does not consider the anti-trust laws perfect nor that discontinuance of the basing point price system will not work some hardships on a few business-

(Please turn to page 342)

## Remodeled Office Setup Promotes

J. L. ("Jerry") Watson, Director of Purchasing and Stores, discusses paint requirements with Harold Melvin, representing the Dann-Gerow Paint Company, in his newly decorated office.







Approximately 5,000 business callers annually are interviewed in the Purchasing Department. Here is J. A. Whatley, from the Atlanta office of the Ohio Brass Company, entering the main lobby. Right: Assistant Purchasing Agents John Parramore and Howard Letzring are kept busy with a purchasing program covering the broad range of materials needed for construction, maintenance, and operation of an extensive electric utility system.





Virginia Brahm, secretary to Mr. Watson. Right: Typing and filing the records supporting the issuance of 15,000 purchase orders a year are the responsibilities of Shirley Hall and Jane Sisk.

In addition to the central stores at St. Petersburg, ten branch warehouses are maintained at strategic points in the power system, each in charge of a storekeeper responsible to the headquarters office.

Clearwater
C. E. McLaughlin

Tarpon Springs E. T. Higgins

Apalachicola R. W. Norman

Bainbridge J. M. Woodbury

Valdosta C. W. Register

Waycross M. E. Braswell

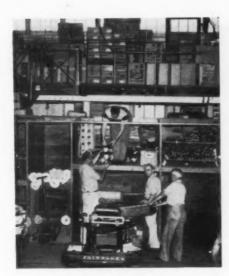
Ocala H. R. Whilden

Winter Park C. R. Clymer

DeLand C. F. Purvis

Lake Wales P. O. Jones

## Efficient Supply Operation



V. J. Strickland, Storekeeper, with three of his assistants: L. A. Forsyth, Jr., H. H. Barrineau, and Jerry Eaton.



Line trucks at the loading platform, located at rear of warehouse.

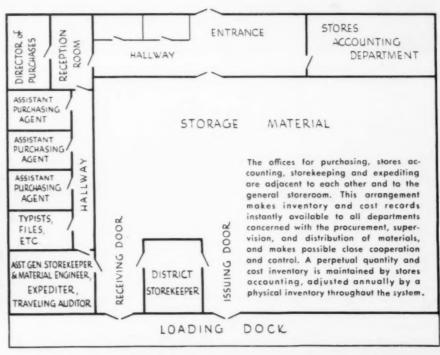
Florida Power Corporation purchasing offices acquire the "new look."

Storeskeeping and stores accounting closely coordinated with the buying operation.

Efficient central control over distribution of supplies through ten stores locations.

#### By J. L. Watson

Director of Purchasing and Stores Florida Power Corporation, St. Petersburg, Florida





Members of the supply team. Left to right: Ridley Miller, General Storekeeper and Material Engineer; P. J. Maurey, Expediter; Warren Wilhite, Purchasing and Stores Coordinator.



Stores Accounting Department staff. Seated: I. C. Broeker, Chief Accountant. Standing: Russell Earl, Faye Minor, Arthur Jensen, and Fred Hudson, Junior Accountants.

## Buying the Right Cutting Oil



Circulating systems equipped with filters and reconditioning stations draw on a central supply of perfectly conditioned oil.



Use of proper coolants contributes greatly to precision and quality control.

By E. L. Cady .

Type and mixture of oil must be adapted to the machine and to the work.

Proper cutting oils and good shop practice make hard jobs easier.

How to work out an efficient and economical program for selecting coolants.

Purchases run from an occasional ten gallons for the repair shop of a small cotton mill to tank car lots for an automobile plant.

Every buyer is impressed by the bewildering varieties of brand names, claims, counter claims, even of terminology used by the various cutting oil makers. The very generic name of the stuff is not agreed upon, various makers calling it "coolant", "cutting compound", "base", and so on. Coupled with these are equally bewildered conflicts of opinion among makers of machine tools, tool materials, cleansing compounds, steels and other materials, as to what cutting oil should or should not be asked to do.

From the purchase engineer's viewpoint, there is still another fac-

tor of confusion. As mixed and in the machine, cutting oils can cost anywhere from ten cents to one dollar a gallon, and this is only the median range of prices. It is hard to tell even so much as what price range to aim at in order to be "about right" or "not out of line".

The basic reason for all these options is that cutting oil can be varied in more ways, to do more jobs or to compensate for more difficulties, than any other element which enters into the metals cutting process.

Cutting oil can be selected to compensate for the weaknesses of shop habits, employee psychology, machine tool designs, physical condition of machines, raw material difficulties, tool materials, tool designs, semi-finished work in process storage problems, parts cleansing problems. It is easy to see that these factors can exist in endless varia-

tions and interrelations. The problem of selecting a cutting oil is (1) that of studying the shop problems and conditions, and (2) selecting the cutting oil companies which offer the highest type of sales engineering.

#### Types of Cutting Oils

The cutting oil industry is over fifty years old, and like any business which has had a long history, it has developed a nomenclature peculiarly its own. Using a technical terminology common to the trade, cutting oils can be divided into four general types:

1. Straight. A cutting oil not intended to be diluted or mixed with

water.

2. Base. Intended to be diluted or mixed with mineral oils, fuel oils, kerosene, or anything other than water.

3. Soluble. Used only after being mixed with water.

4. Universal. An oil or a base which may be mixed either with water or with mineral oils, kerosene or other dilutants.

Straight cutting oils sometimes are diluted, used as bases. Bases are never used unless diluted. Most of the universal types are bases.

Some shops are highly exact in all of their control measures, even resorting to laboratory testing of every product in use along the production line. At the other extreme, some shops are lax to the point of giving practically no attention to systematic control. There are all sorts of gradients between these extremes.

If a shop has no supervisor who can be trusted to make sure that cutting oils always are mixed in exact accordance with directions, that machine sumps always are kept filled, and that the oil in the machines is kept free of fouling elements and contaminants such as lubricant seepage from the machine bearings or even garbage thrown in by the operators, then, in order of desirability, that shop is best off with:

1. A straight oil, good enough to do any job in the shop and therefore better than need be for most work, high in lubricating ability for the machine bearings, strong in antiseptic and anti-foulant properties, intended to be used "just as it comes from the barrel" and without any diluting of any kind.

2. A base which one responsible man will dilute to three or four different mixtures suitable for various classes of work, each mixture to have the general properties mentioned for the foregoing straight oil, each mixture to be kept in a separate drum plainly marked with the purposes for which the mixture is

suitable, one responsible stock room man having sole authority to dispense the various mixtures.

3. A soluble oil or a universal base to be handled by the principles laid down for the base in (2) immediately above.

As shops rise in the scale of control habits, the possibilities or practicability of using several different oils, or several different mixtures of the same soluble oil, in order to have exactly the right one at each operation, rise also.

Good shop control habits have to pay off somewhere or nobody would be using them. There is nowhere that they can show better results than in the "as mixed in the machine" costs of cutting oils and the results the oils give. And the results of better cutting oils, in terms of more work and better quality control per machine hour, always are vastly more important than the costs of the oils.

The purchase engineer rarely fixes the habits of his shop. Therefore, in the selection of cutting oils he has to follow them.

#### Varieties of Operations

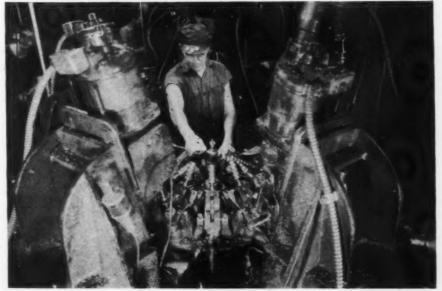
Repair shops, small jobbing shops, and makers of small lots of metal products may need to break down machine setups and to set up for new work quite frequently. The new work may mean the machining of different alloys, such as a change from steel to brass or to aluminum, and the severity of the cutting problems may change as radically.

To pump or drain out all the cutting oil with each change of work would be an awkward and wasteful procedure. Such shops are best off with a single straight oil which has sufficient lubricity and heavy pressure resistance to be suitable for use on steel but also has the non-staining qualities needed for working with some of the non-ferrous alloys.

Where shop control technique is good, a soluble oil or a universal base may be preferred. In general, there should be a shop man who can (and will) perform the simple operation of removing a small quantity of cutting oil from the machine, shaking the sample up with hydrochloric or sulphuric acid (in accordance with the directions of the oil maker) and thus observing the amount of separation of oil from water and hence the strength of the mixture. By simple calculation he can know how much oil to add to enrich the mixture until it is at the proper proportion for a change to a tougher machining operation, or

Application of cutting oil ranges all the way from a simple manual operation to a complicated automatic process.





how much water he may add if he wants to fill up the sump when the setup is to be changed to a lighter

duty.

Soluble oil mixtures practically always cost less per gallon as mixed in the machine than do any straight oils or base mixtures. But although soluble oils mixtures are by no means "sensitive to bad treatment", they can cost plenty of ruined tools and spoiled work if handled on a hit-or-miss basis.

In other types of shops the work may be all very much alike, or there are long lines of automatic screw machines, lathes, millers, grinders, broaches, etc., capable of uniform

treatment.

Here it is practical to sharpen the process of oil selection and mixing so as to arrive at the lowest cost oil that will deliver all that the tools and

machines can use.

With standard conditions like these, it is practical to run the entire gamut of testing the oil condition once every shift, changing the rake and other angles of tools so they will work with lower cost oils, circulating the oils to filtering and reconditioning stations so that each machine draws constantly on a central supply of perfectly conditioned oil, refrigerating the oil or taking other means to keep it at constant temperature so that every hour of machine performance is exactly like every other hour. All of these measures permit the use of lower cost cutting oil in ratio to the severity of the work, and also contribute to the vastly important objective of getting more production with higher quality con-

Good purchase engineering often

calls for dividing the shop machines into two or more classifications. The machines belonging to one class may be separately located or grouped, or they may be intermingled with machines belonging to another class.

Machines that are all working on the same alloys and all having about the same general cutting severities, so that all need a single oil or oil mixture, would be considered as being in the same class. There will probably be other machines which must be treated like those in a generalized shop.

Standard conditions, or conditions permitting the use of one standard oil or mixture of oils, are far more common than many shop managements suppose. Their existence is not realized because no one has taken the trouble to isolate them.

Any purchase engineer who wants to go into the mathematics of metals cutting will find plenty of manuals on the subject. But in general, a mental picture can be formed by thinking of a few simple factors in relation to severity of operations:

1. The strength of the material to be cut, its hardness, toughness, brittleness, ductility, how it will behave when deformed to the point that chips are forced to come off.

2. The depth of the cut (thickness of the chip). For any given alloy, this has more influence than any other factor upon the heaviness of chip pressure against the tool.

3. The width of the cut. A wide and shallow cut does not exert as much chip pressure, does not tend to burn up the tool so easily, since the same amount of pressure is exerted over a larger area and hence is less in pounds per square inch.

4. The stiffness of the support of the tool edge or cutting area. Broaches and reamers offer less support to their edges, generally speaking, than do lathe tools, hence broaching and reaming can be more severe operations even though the metal removed per tooth is less than that removed by the lathe point.

5. The ability of the cutting edge to escape periodically, to "take a rest". A milling cutter tooth escapes the cut and takes a rest until it gets around for the next bite; a lathe tool has to stay right there until the cut is done. Therefore the lathe tool has the more severe duty for the

same depth and alloy.

The purchasing engineer has a complex problem on his hands when cutting conditions are extremely severe. The sales engineering skills of cutting oils men, tools materials men, machine tool men, and raw materials men, all have to be teamed up with the skills of tool designers. Quite often the purchasing engineer has to visit plant after plant where similar conditions have been encountered, to find out what has been tried and how it has worked.

The cutting oil may be either costlier in itself, or else a costlier mixture of a base and dilutants, than is used elsewhere in the shop. Antiweldant properties, the ability to prevent chips from eroding tools by continually welding to tool surfaces and then tearing minute bits away, may be highly important. Wettingout properties, the ability to intimately cover more of the metal surface and to penetrate more rapidly into finer crevices, may be equally important. The oil has to be balanced to its job.

A stream of coolant directed at the point of work keeps this drill press up to rated production.



Machines can be classified according to comparable types of operation and severity of service to standardize and simplify the variety of cutting oil requirements.



Because the oil has to be so carefully worked out, the severest task in a plant rarely is a good test by which to determine what oil is to be specified for the easier conditions. The mistake of telling a cutting oil sales engineer to solve the worst conditions, the trouble spots, before attacking any others is all too common a method for eliminating chances to achieve cutting oil and machining cost economies.

An even more common error is the failure to insist that the plant men meet severe cutting conditions which easily could be met. Higher cost free machining raw materials are specified and purchased, entire bars or large quantities of castings are heat treated to achieve better machinability, when by a thorough going purchase engineering study of cutting oils and other factors the severe cutting conditions could be met and these extra costs avoided.

Likewise, the severity of a cutting job may sometimes be mitigated by taking more cuts but lighter ones, thus accomplishing less work per machine hour, when with a purchase engineering study of cutting oils and the accompanying factors the severe conditions could be met and the machine time saved.

#### Condition of Machines

Cutting oil sometimes is required to lubricate machine bearings, or the bearings are permitted to be so poorly protected that the cutting oil unavoidably enters them. Machine bearing lubricant sometimes is permitted to seep or drip into the cutting oils where it acts as a contaminant.

Where any of these conditions obtain, a higher cost straight oil hav-

ing either the lubricity to lubricate the bearings, or having such excess of anti-weldant and other abilities that it will maintain acceptable effectiveness even though contaminated, may be necessary.

Soluble oils having lubricities sufficient for most machine bearings have come onto the market and are receiving increasing numbers of assignments. But it is difficult to imagine that where cutting conditions (and hence bearings loads) are at all severe, any machine tool is as well off when its bearings are lubricated with cutting oils as when they receive lubricants especially made for bearing purposes.

Some machine tools have their bearings so positioned, proportioned and installed that it is nearly impossible to keep the cutting oils out of them. But a search by the usual methods of purchase engineering is likely to find shields, packings, guards and other devices for bearings which will make sure that a lubricant is used where it belongs and cutting oil where cutting oil belongs.

#### Feeding Methods

So far as is known, the first cutting oil was either a lard oil or else tobacco juice personally squirted by the individual mechanic. Cutting oils have improved vastly since those days, but so far as many shops are concerned, feeding methods have improved very little.

The first problem in good feeding is to obtain adequate filters or strainers to keep the oil clean, adequate pumping capacity to supply a heavy stream, adequate tubing and hose to get the oil to all necessary points. This is a problem in pur-

chase engineering. The necessary mechanisms and parts are on the market, but their presence on machine tools as newly bought is far from invariable.

The first principle of good feeding is to flow the oil from enough nozzles aimed in enough directions. For severe conditions, and most of ordinary ones, the oil should come from beneath the tool point and from both sides as well as from above it.

The second principle is to flow on enough oil, and keep it flowing continuously enough, to keep the work piece and the tool mountings at constant temperature. The reason is that as these parts increase in temperature they increase in size, the working relations between them change, and tool failure as well as work inaccuracies are promoted.

A lower cost cutting oil fed properly to the tools is likely to do a better job than a higher cost one fed improperly.

By insisting upon close shop control, permitting no time-losing compromises with abilities to meet severe cutting conditions, and insisting that the temperature control and the cleansing method and the oil feeding mechanisms all be correct, purchase engineering can simultaneously gain production speeds and quality control while reducing the "as mixed in the machine" or the "per part machined" costs of the cutting oil itself.

Cutting oils exist in so many varieties because the problems they must meet are so varied. No matter what the problem, if the machine tool has the capacity to handle it then purchase engineering can find a cutting oil to meet it with economy.

Cooling solutions must be kept up to proper strength for efficient service; systematic testing by the acid process can be made a part of shop laboratory routine.



A soluble oil is used as the coolant on these carbide tip cutters in an extrusion machine.



### Guide to

### Consolidated Military Procurement for Army - Navy - Air Force

OR several months past, emphasis in the procurement policies of the National Military Establishment has been in the direction of coordinating and consolidating procurement activities of the various services. This development has not been undertaken as a program to merge or consolidate the purchasing agencies themselves. Rather, it is an extension of the process known as 'single department purchasing' Under this plan, the responsibility of procuring-for all services-certain products or product classifications, is assigned to the particular agency best qualified to handle those requirements, by reason of predominant interest in those products, or greatest proportion of the quantities involved, or superior experience or facilities for the assignment. In this way, a great deal of duplication can be avoided and all services benefit. On some items, the Army can most advantageously serve as the procurement agency, not only for itself, but for the Navy and Air Force as well. On other items, the Navy or Air Force would act in a similar role. On a few items-currently illustrated in the case of petroleum products and medical supplies-a joint purchasing agency representing all branches appears as the best solution. The overall supervision of this program is in the hands of the Munitions Board.

A comprehensive article on this program, with particular attention to its effect on the supplier, appeared in our November, 1949, issue. It outlined a study of production facilities and procurement assignments then in progress. The results of that and previous studies are now apparent in the publication of an index to the items coming under single department purchasing, as agreed and authorized by the Procurement Policy Council, composed of Major General D. Noce, Rear Admiral M. L. Ring, and Major General E. M. Powers, representing the three departments. The index includes a reference to the specific agencies of the Army, Navy, and Air Force to which the items have been assigned, and the

addresses of the purchasing offices.
Approximately 90 major products have been assigned under this program, in ten classifications, besides a number of miscellaneous items. The list includes: Aircraft parts and equipment; photographic ment; cutlery and hand tools; conequipment; ordnance struction equipment; motor vehicles; railroad equipment; petroleum, oils, and lubricants; watches and clocks; food and food products. The miscellaneous products include coal and coke; agricultural implements; industrial machinery; and athletic goods.

A tabulation of this information is presented herewith. For the convenience of present and prospective suppliers of military supplies, it has been prepared in the form of a single-sheet chart, copies of which can be obtained from the Munitions

(Please turn to page 350)

#### PURCHASING OFFICES

ey		
	ARMY	

- A-1 Chicago Procurement Office, Corps of Engineers, 226 West Jackson Boulevard, Chicago 6, Ill.
- A-2 Atlanta Lumber Branch Office, Corps of Engineers, P. O. Box 1889, Atlanta 1, Ga.
- A-3 Portland Lumber Branch Office, Portland 5. Orea
- A-4 Procurement Division, Transportation Corps Marietta, Pa.
- A-5 Chief, Supply and Facilities Divi-Office, Chief of Transportation Washington 25, D. C
- A-6 Chicago Quartermaster, Purchasing Office, 1819 West Pershing Road, Chicago 9, Ill.
- A-7 Headquarters Quartermaster Mar-ket Center, 226 West Jackson Boulevard,
- A-8 Watertown Arsenal, Watertown 72, Mass
- A-9 Rock Island Arsenal, Rock Island, Ill.
- A-10 Frankford Arsenal, Philadelphia 37, Pa.
- A-11 Springfield Armory, Springfield 1, Mass.
- A-12 Picatinny Arsenal, Dover, N. J.
- A-13 Watervliet Arsenal, Watervliet, N. Y.
- A-14 Detroit Ordnance District, 6301 West Jefferson Avenue, Fort Wayne, Detroit 17, Mich.

#### NAVY

- N-1 Bureau of Aeronautics, Navy Department, 18th Street and Constitution Avenue, Washington 25, D. C.
- N-2 Bureau of Supplies and Accounts, Fuel Division, Navy Department, Arlington Annex, Washington 25, D. C.
- N-3 Bureau of Ships, Navy Department, 18th Street and Constitution Avenue, Washington 25, D. C.
- N-4 Pr. 5, Bureau of Ordnance, Navy Department, 18th Street and Constitution Avenue, Washington 25, D. C.
- N-5 Pr. 6, Bureau of Ordnance, Navy Department, 18th Street and Constitution Ävenue, Washington 25, D. C.
- N-6 Bureau of Yards and Docks Annex,
- N-6 Bureau of Yards and Docks Annex, Navy Department, Washington 25, D. C. N-7 Naval Aviation Supply Office, Oxford Avenue and Martins Mill Road.
- Noda,
  Philadelphia 11, Pa.
  N-8 Navy Purchasing Office,
  Navy Department,
  18th Street and Constitution Avenue,
  Washington 25, D. C.
- N-9 Navy Purchasing Office, 1206 South Santee Street, Los Angeles 15, Calif.

#### AIR-FORCE

AF-1 Procurement Division, Air Matériel Command, Wright-Patterson Air Force Base, Dayton, Ohio

#### JOINT

#### (Army-Navy and Air Force)

- J-1 Armed Services Petroleum Purchas-
- J-1 Armed Services Petroleum Purchas-ing Agency, Tempo 4 Building, Room 11005, Washington 25, D. C. J-2 Armed Services Medical Procure-ment Agency, 84 Sands Street, Brooklyn 1, N. Y.

### ITEMS UNDER CONSOLIDATED PROCUREMENT

(As of January 1, 1949)

AIRCRAFT PARTS AND EQUIPMENT	Road and pavement repair, marking, leveling, and demolition equipment A-1	LUBRICANTS
Key to		Crudes, petroleum and mineral J-1
Purchasing Offices	Scaffolding, adjustable and demountable	Fuel, mineral, and shale oil J-1
		Gasoline and components J-1
Aircraft engines, propellers, and frames AF-1, N-1, and N-7	Stabilizing, compacting, and soil- preparation equipment for roads	Lubricants, including gear lubricants,
Lifeboats, rigid, air-borne AF-1	and streets, except tractor and truck	greases, oils, and oil base stocks. J-1
	attachments, A-1	Naphtha solvents J-1 Petroleum gases J-1
	Wood materials, crude and fabricated	Petroleum gases J-1 Petroleum products, including waxes,
CAMERAS, FILM AND PHOTOGRAPHIC EQUIPMENT	(Lumber) A-2 and A-3	petrolatum, and related items J-1
Motion- and still-picture equipment and sensitized materials	GUNS, ROCKETS, AMMUNITION, AND ORDNANCE EQUIPMENT	RAILROAD ROLLING STOCK, MAIN-
Photographic chemical preparations AF-1	Key to	TENANCE PARTS, AND EQUIPMENT (See also MOTOR VEHICLES, INCLUD-
Photographic processing and finish-	Item Purchasing Offices	ING AMPHIBIOUS LANDING CRAFT
ing equipment and supplies AF-1	Antiaircraft carriages, mounts, and	AND TRACTORS)
X-ray film, medical	recoils A-8	Locomotive cranes and derricks N-6
	Artillery carriages, mounts and re- coils	Railroad construction and mainte-
	Artillery carriages, mounts, recoils,	nance equipment—Power driven A-1
CUTLERY AND HAND TOOLS, INCLUDING FOOD-HANDLING	and transport wagons for 8-inch gun and 240 mm. howitzer only	Railroad transportation equipment; except items of special design or peculiar to a particular department A-5
EQUIPMENT	Artillery shells and projectiles A-10 and N-5 Bayonets A-11	Rolled wheels, axles, track accessories
Cutlery, food processing (Including	Bombs, fin assemblies, and subassem-	(wrought steel wheels, wheel cen-
butchers, canners, fishery, and	blies A-12 and N-5	ters, axles, and tires)
bakery)	Cartridge clips Demolition and shaped charges A-11 A-12	
Cutlery, industrial (Including shoe, rubber, linoleum, woodcarvers, and	Fire control equipment (Except range	WATCHES, CLOCKS, AND PARTS
paper hangers) N-8	indicator and binocular Navy)  Fuzes, mechanical, time, and V. T  A-10,	w .
Edge tools, files, rasps, and saws N-8	A-12 and N-5	Key to Purchasing
Hand tools N-8	Guns, howitzers, mortars, and rifles; 20 mm and above	Item Offices
Kitchen utensils, tools, and cutlery and tableware (Except silverware)	Hand carts High explosives, propellents, blasting	Chronometers N-7 Clocks, spring and electric, including
Mechanics' measuring tools . N-8	agents, supplies, and miscellaneous explosives	movements and parts N-7 Watches, complete (Including stop
	Launcher, grenade A-11	watches, watch parts, and move-
	Launcher, rocket 2.36 and 3.5 A-9 Links, metallic belt Cal. 30, 50, 60 A-9	ments).
CONSTRUCTION, MINING, AND	Machine guns, .30 to .50 cal., except	
EXCAVATING EQUIPMENT	air; also .60 cal.; machine gun trainers, mounts, and tripods	
Key to	trainers, mounts, and tripods  Machine guns, .30 to .50 cal. air  A-11	FOOD AND FOOD PRODUCTS,
Purchasing Item Offices	Military tanks, armored cars, self-pro-	INCLUDING BEVERAGES
Construction; mining and excavating	pelled artillery and other armored combat vehicles. A-14	Animal oils and fats
equipment (Mining machinery, rock-	Mines, naval and aerial, and com-	Baking powder, yeast and other pre- pared leavening agents A-6 and A-7
drilling and earth boring; power	ponents N-5 Navy machine gun mounts for boats N-4	Beverages A-6 and A-7
excavators, wheel-mounted; dredg- ing equipment; scrapers; tractors,	Pyro powder N-5	Butter and margarine A-7
contractors, loaders; crawler carts) A-1	Rockets, mines, signals, grenades, and components A-12 and N-5	Flour and related products A-6
Contractors' jacks (For supporting	Scabbards A-9	Food products, perishable A-7
trench sidewalls, concrete forms,	Small arms ammunition Small arms (rifles, carbines, subma-	Food products, non-perishable A-C
and related uses)	chine guns, pistols, revolvers, and	Sugar and molasses A-6
Graders and maintainers N-8 and N-9	shotguns) A-11	MISCELLANEOUS
Logging equipment A-1		Agricultural machinery and imple-
Oil field producing equipment N-8	MOTOR VEHICLES, INCLUDING AM- PHIBIOUS LANDING CRAFT (See also	ments, including tractors A-1 Coal
Power excavators and attachments (Track laying only) N-8 and N-9	RAILROAD ROLLING STOCK, MAIN- TENANCE PARTS, AND EQUIPMENT)	Coke
Road-making machinery:	Key to	Domestic water systems (Power oper-
Bituminous mixing, paving and	Purchasing Item Offices	ated units) shallow and deep well and N-
related equipment A-1 Concrete mixing, paving, plac-	Amphibious military motor vehicles	General purpose industrial machinery
ing, and related equipment,	(Except landing vehicles tracked). A-14	for crushing, pulverizing, screening, and mixing
including cement handling and placing equipment N-8 and N-5	Landing vehicles tracked N-3	and mixing N=
	Passenger carrying vehicles, trucks A-14	Medical supplies J-
Road and pavement clearing and	Tractors: Earth moving, mining, ag- riculture (Excludes materials hand-	Saw mills (Complete units)
cleaning equipment, except tractor and truck attachments <b>N-8 and N-9</b>		



Ram truck known as the Skylift Giant, made by Automatic Transportation Company, Chicago, Ill., is capable of handling steel coils weighing up to 60,000 pounds.

## Reducing the Cost of Materials Handling

By George E. Henry

Savings up to 75% in cost of handling are made possible by modern equipment.

Other benefits include fuller utilization of space, continuous flow of materials.

Philadelphia exposition unveils new types and applications of basic equipment.

Archimedes and his predecessors invented the lever and the wheel, the winch, the skid, and first took advantage of the leverage provided by a long pole to simplify the moving and handling of materials. But in spite of the ages that have elapsed between then and now, these elemental things, somewhat improved, are still used extensively in conjunction with a strong back for materials handling. Sticking to the old techniques of crowbar, rollers and

wheels of simple design, plays a large role in keeping up the breakeven point in many companies even today, though it is well known that the skid with the aid of a modern industrial tractor is solving some otherwise pretty tough handling problems, and cost problems, in many of our huge industrial and manufacturing plants.

Through the evolution of the socalled iron and steel age, cranes and derricks, elevators and chain hoists, and conveyors of one kind or an-



This installation by the Alvey Conveyor Manufacturing Company of St. Louis shows three lines of gravity roller conveyor feeding inclined belt conveyor. Such installations spell high efficiency and low handling cost.

other have been used for various services handling raw materials and materials in production, warehousing, putting cargoes on ships and shipments in freight cars and trucks, and now in cargo planes. But it has been during and since the recent war years that electric and gas powered industrial tractors and trucks and other new types of conveying and handling equipment have received the recognition due them as time saving, labor saving and cost

cutting devices.

In spite of the distinctive advan-tages offered by these new equipment developments, from a general materials handling standpoint, in-dustry up to Pearl Harbor day and the subsequent urgent demand for time, men and materials, had been somewhat negligent in recognizing the merits of modern materials handling equipment, especially the industrial power trucks, tractors, powered walkie trucks, tow trucks and so on. Labor was cheap, so were crowbars, rollers, factory hand trucks, and skids. So long as labor was willing to hire out its brawn at low rates, and the spread between manufacturing cost and selling price permitted generous profit, there was little or no worry about the cost of getting raw materials into and manufactured materials out of a plant. If business got too bad, the brawn and sweat were given a payless vacation, and there were no big investments in idle equipment.

But in the past few years-during

and since the shooting war, a new order of things has developed. Labor has been scarce, and in every walk and alley of life is more highly paid than formerly. Taxes and increased material costs have reached new highs. Today the high cost of materials handling is recognized as one of the vulnerable factors in developing high break-even points.

Industrial pacemakers, in the realization that handling costs alone made up a large part of the labor payroll, averaging around 22% in a group of highs and lows, have been pioneers in the adoption of the divers types of money and time saving materials handling equipment as it was developed. It was recognized that such equipment was a means for lowering overall costs, meeting competitive prices, and increasing profits. So they have taken to power and lift trucks and tractors and portable cranes and tow trucks, as the railroads are taking to Diesels for power and low operating costs.

They have found that the new equipment is a dependable, highly efficient means for lowering handling costs by as much as 25%, 50% and sometimes as much as 75%. Also, industry has learned that the new materials handling equipment makes for savings in such things as smaller inventories, doubled and trebled use of storage space because of the ease of tiering and piling materials, of storing parts in high bins, and more rapid loading and unloading of automotive trucks. There has

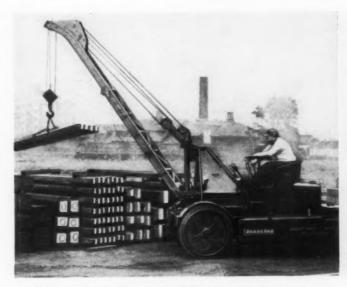
been a marked reduction in personal injuries and much easier work for the men doing the unloading and storage, delivering to production lines and fabricating departments, warehousing, all of which have made for definite savings and faster and better production.

These developments explain why many purchasing agents were interested visitors and spectators at the Third National Materials Handling Exposition recently held in Exposition Hall, Philadelphia. Here some 237 exhibitors displayed, explained and demonstrated \$5,000,000 worth of modern equipment. The exposition was a veritable beehive of activity, and the thousands of visitors were literally awed by the amazing and imposing presentation. There were gas and electric powered industrial trucks and tractors, pallet trucks, high lift trucks, trucks with bale or barrel grabs, yard cranes, walkie power trucks, hoists, belts, roller and roller-skate conveyors, elevators, overhead conveyor systems for handling and processing, a variety of hand trucks including some with tractor treads, pallets, and

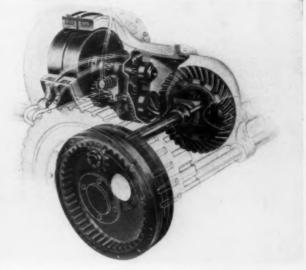
#### Cost Reductions Imperative

other equipment.

It was quite evident, as has been stressed at national and local meetings by prominent purchasing agents, that materials handling commands the direct interest of the P. A., for obviously handling costs



Here is Krane-Kar of the Silent Hoist & Crane Co., Brooklyn, N. Y. This one with mobile swing boom crane is used by the Kropp Forge Co., Chicago, Ill. It handles single billets up to 15,000 lbs. Yard handling cost is placed at 8c per ton. The Krane-Kar handles a quarter million pounds in an 8-hour day with fuel cost of \$1.50.



The Industrial Truck Division of the Clark Equipment Co., Battle Creek, Mich., announced new Dynatork Drive at the Materials Handling Exposition. Its smooth, quiet, efficient transmission of power was demonstrated on a Clark gas-powered Utilitruc fork lift truck. It is claimed to make for higher efficiency and reduced maintenance and repair costs.



Monoveyor taking castings to shot blast room in plant of General Foundry Co., Flint, Mich., in system designed, manufactured and installed by the Mechanical Handling Systems, Inc., of Detroit. The system enables four men to do the work formerly done by ten, with substantial savings to the company and increased earnings for the men.

are a part of material costs, even though plant handling may not be so charged through accounting. And it is patent that cost reduction should be of first concern to every executive. Nor should it be overlooked that aside from direct labor cost savings, modern materials handling involves other practical means of saving in containers and shipping packages, storage, inventory control, and the maintenance of minimum inventories looking to quicker turnover thereof.

Moreover, these new developments are of concern to the purchasing agent because they make possible decided economies in the handling of incoming shipments, opening the way for collaboration with suppliers looking to the development of packages or units that will make possible maximum railroad car or truck loading, and economical handling at the buyer's plant. True, some of the larger industrials have their own packaging engineers and materials handling experts. However, these departments have little or no control over incoming shipments, and it is up to the purchasing agent-the man who is making the contact with suppliers-to get their cooperation in the development of shipping units and packaging that assure handling economies.

In the thousands of smaller companies where volume and diversity

of materials handled do not warrant the maintenance of materials handling and packaging engineers, rare opportunity is afforded the purchasing agent to pave the way for imposing economies by careful analysis of materials handling and requirements, and packaging.

Convening concurrently with the exposition, a conference on materials handling sponsored by the materials handling and management divisions of the American Society of Mechanical Engineers, featured numerous discussions on materials handling and work simplification.

Curtis L. Barker, Jr., of the Pallet Loader Division, Lamson Corp., Syracuse, N. Y. said that although his subject—"Opportunities for Management Incident to Materials Handling"—like some of the practices that still exist, is pretty well worn, he doubted if there were many in top management who didn't realize that unnecessary handling can mean the difference between operating at a profit or at a loss in the highly competitive period ahead.

"Unless your operations have been subjected to a periodic study from the standpoint of reduced handling, in all probability," he said, "no more profitable cost reductions can be realized than in the fields of material handling. It is involved in one way or another in every department of an organization.

"Purchasing," he said, "is involved in supplying a breakdown of all material and packaging costs by items, and it is quite possible the packing cost can be reduced or even eliminated with modern handling practices." He also emphasized that Purchasing should "arrange with suppliers to have cars or trucks loaded in such a manner that they can be unloaded with a minimum of labor and time."

#### 30% of Manufacturing Cost

Another of the Conference speakers was T. O. English, Assistant General Purchasing Agent, Aluminum Company of America, Pittsburgh, Pa., who discussed the subject, "The User Talks to the Sales Engineer." Mr. English stated that although no one actually knows, and there is no accounting procedure that will provide a definite figure, it is probably fair to estimate that materials handling represents 30% of the total manufacturing cost of most products. In some cases the percentages may be more than 50% and in others it is unquestionably less than 30%. Regardless of the exact percentage, however, he em-

phasized, materials handling represents a tremendous expense in dollars and man-hours.

"Under the pressure of advancing costs, many manufacturers are finding it difficult to stay in business, and impossible to grow or expand normally," he continued. "With current economic, social and political trends, wages in industry have risen to unprecedented heights and are not likely to drop. Many industries are being forced to introduce production economies in every possible way.

### Inefficiency Must Be Eliminated

"Manufacturers are impressed with materials handling equipment. Though perhaps unaware of it, industry is waiting to be sold improved production methods. The inflationary spiral has emphasized the importance of using materials handling equipment for the purpose of cost reduction. Management realizes more than ever that our future peacetime economy will not support the inefficiencies of the past.

For almost ten years, few manufacturers, if any, had had to improve their products and engage in real selling. The generation of sales engineers (and this applies to all industries ) who once knew how to sell in a buyer's market have lost the knack, or have grown so indifferent to 'hammer and tongs' selling that it is doubtful if they are a good influence for the younger men. Even sales managers are causing their bosses some concern. Top executives here and there are expressing real doubt that their sales staffs will be able to readjust to the return of a buyers' market, start training salesmen again, and do a real job of sell-

"There is a need for more reliable sales engineering. A sales engineer in the materials handling industry is very much on his own in this large and relatively new field. For the present his mistakes may go unnoticed because he is not dealing with engineers who have been seasoned with years of experience in materials handling. It takes a good sales engineer to recognize that his equipment is not suitable for a certain application. Less capable engineers may find it impossible. The need for reliable service is a challenge to manufacturers of materials handling equipment."

### Notable Savings Possible

"Materials Handling as an Element of Cost" was the subject of an interesting talk by Stevens H. Hammond, president of the Whiting Corporation, Hammond, Ind. He said that in the past materials handling was considered as merely a part of "overhead" but upon analysis it was discovered that "it represented a much larger part of our costs than we had ever suspected,' pointing out the foundry industry, where as much as 150 to 200 tons of materials must be handled for every ton of finished work produced-an extreme case. He said that in the manufacturing industry some "40% of all shop activity is devoted to materials handling."

"If materials handling is an important part of production costs," he continued, "the mechanization which replaces human energy with mechanical energy is bound to result in notable savings. Wages today are at an all-time high. Average weekly earnings for all manufacturing industries were \$52.07 for March 1948. Any device that can save the time of one man will not only earn \$52 a week in wages, but in addition the extra investment per worker for training, social security, insurance, supervision, retirement funds, etc. Thus it is not unusual to be able to justify an investment of \$10,000 to \$20,000 or even \$25,000 for equipment which will replace a man on the payroll.

"There are other benefits," he said, "that are to be obtained from efficient materials handling that are even more important sometimes than reduced costs. For example, there is the steady flow of production, the utilization of existing storage space to better advantage, shortened production cycles, reduction of inventory of goods in process, and the change from stop-and-go to continuous flow reduction. All of this is in addition to better working con-

ditions, better safety and other advantages which improve employee relations and attract a better class of labor."

Mr. Hammond cited a case where the installation of a conveyor belt costing \$10,000 brought annual savings of \$56,000, and savings by a manufacturer of mining machinery of at least 62¢ per ton as compared with unloading by hand.

### Doubles Storage Space Use

He said that with the new techniques made available through industrial and lift strucks plus pallets, it is now possible to make the same floor area do double duty and often three or four times more storage duty. And he emphasized that speedier methods of handling materials, particularly finished products, often may also increase inventory turnover and make possible better control.

Concluding his talk he said, "Management is entering a new year with new problems and possibly a reduced volume of business. In order to continue profitable operations with a reduced volume it will be necessary to re-evaluate every phase of production procedure. manufacturers have squeezed out the waste and attained high efficiency in their direct labor operations. For them the greatest opportunities for future economies lie in the reappraisal and mechanization of the 40% of shop activity concerned with materials movement. These opportunities are not confined to big plants, mass production plants, or the heavy industries. They are almost everywhere-wherever people work and there are things to be moved."

C. M. Harris, production manager

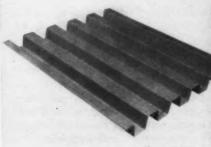
of the Electrolux Corporation, Old Greenwich, Conn., discussing the application of various types of materials handling equipment from fork trucks to roller skate conveyors, stated that through the services of four men at foreman level in charge of receiving stores, outside temporary warehouse, and transport and material handling equipment, all of whom report to the general stores supervisor, it has been possible to handle about 2500 tons of material per month with only again as many men as were previously employed to handle approximately 600 tons per month, notwithstanding the fact that almost all of the material is stored in warehouses anywhere from 5 to 35 miles from the plant, whence it has to be transported for use by the production department.

### Time, Labor and Space Saving

He cited numerous instances of time and labor saving, among them being the use of a portable roller skate conveyor which enabled only two men to unload and store a full trailer load of die castings or other cartoned material in 30 to 35 minutes, and the use of a fork truck and adjustable booster which enabled four men to unload a full trailer load in only 40 minutes—a job which previously required four to ten men and tied up the trailer for about two hours. He said that prior to palletizing and conveyorizing, the packing and shipping of accessories and supplies to branch plants required 9,000 square feet of floor space and 33 men. By installing caster equipped baskets, pitched roller skate conveyor, fast weighing dial scales, and pallets for the finished packages, it was possible to perform the operation with only 14 men and in an area of but 1,800 square feet.

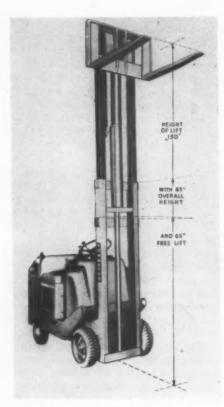


This train of trailers is being hauled by tractor made by the Buda Company of Harvey, Illinois. Adapting tractor-trailer trains to yard and interplant transfer makes for decided economies





Corrugated metal pallet designed for Push-Pull truck, developed by Automatic Transportation Co., Chicago, which makes it possible to ship merchandise without pallet. In factory or warehouse, merchandise is tiered on the pallets. Load is mounted on paper and for shipment it is placed in car by fork truck, load and paper being pushed into position by the push-pull unit.



This is new High-Free lift Towmotor demonstrated by the Towmotor Company, Cleveland. Total lift is 130"; free left is 65" with lowered mast height of 83". It is available on three Towmotor models, 3000 to 5000 pounds.

Mr. Harris stated that company trucks are now equipped with lengths of roller skate conveyor and can be unloaded far more expeditiously than the common carriers

not so equipped.

Commenting upon the safety factor, he stated that the possibilities of eliminating the physical labor as well as the hazards commonly associated with the strong arm methods of handling carboys, drums and sheet and coiled steel, the installation of each piece of modern material handling equipment has been accepted with marked enthusiasm by the men assigned to the work, and that by exercising proper care in the selection of manpower for the powered equipment the result has been three and a half years of operation free of any accidents or injuries to any of the personnel.

#### Important to Small Companies

T. L. Carter, materials handling engineer, American Cyanamid Co., New York, in the course of a talk on "The Materials Handling Engineer", stated that warehousing is one of the most neglected manufac-

turing operations he knew of. "In most industrial setups I have seen," he said, "warehousing and receiving and shipping are usually in one department. Check your cost of handling throughout your operations and you will find that handling to and from storage represents a big percentage." He pointed out that intelligent materials handling was especially important to the smaller companies, for they can't afford losses as readily as can the big corporations.

A. R. Walkley, Shaw-Box Crane & Hoist Div., Manning, Maxwell & Moore, Inc., Muskegon, Mich., stated that the crane and hoist industry has available equipment designed for almost any conceivable duty. Low cost hoists have permitted areas in manufacturing operations that previously were serviced purely by overhead cranes to be broken down into functionalized operations. In other words, large overhead cranes are now being correlated with smaller floor cranes and light overhead cranes fitted with hoists to service given areas or ma-chine tools. Under this arrangement, Mr. Walkley stated that utmost economies in handling materials can be effected. He also said that one of the most important jobs facing users and potential users and the crane and hoist builder, is that of preventing the misapplication of the various types of equipment that are now available.

L. O. Millard, Link Belt Co., Chicago, in the course of a slide illustrated talk on belt conveyors stated that a 60-inch wide belt in a Pennsylvania bituminous mine handles 3,000 tons per hour. He said that it is quite likely that 84-inch or even 96-inch wide belts will be available soon. A 30-inch wide belt conveyor under construction in a West Virginia plant is 10,900 feet long from head pulley to tail pulley-more than four miles of belt operating as one conveyor. Also, another single 42inch wide belt conveyor is being built for an Illinois mine with a total vertical lift from tail pulley to head pulley of 865 feet.

Currently, Mr. Millard said, textile cord belts are being made substantially stronger than their heaviest predecessors, and steel wire cord belt from four to ten times as strong, depending on width and troughing characteristics. And, he said, high strength belts cost substantially more than those of standard construction, and must be operated at their maximum safe load

in order to justify the additional expense. Commenting upon the use of bulk handling systems, he pointed out that such are not "packaged merchandise" and cannot be selected from catalogs; on the contrary, the success of each installation depends upon a thorough study by capable materials handling engineers.

#### Automatic Pallet Loader

F. N. Landon, Sun Oil Co., Philadelphia, Pa., told about the "auto-matic pallet loader", a number of which have been installed by his company. The loader, he said, bridges the gap of manual labor between the end of a carton producing line, no matter how automatic, and the palletized warehouse or shipping platform. The new machine, he explained, solves the problem of receiving the cartons at the end of one of a number of production conveyor lines and automatically piles them in any predetermined pattern upon pallets. He placed the indicated savings through one of these installations at \$17,445 per vear, in contrast with an investment of \$30,000 for equipment including conveyors. Mr. Landon stated that the machine can be adapted to packages other than cartons, without much alteration of the basic design. He said that one of the next developments in equipment of this type centers around a machine which can palletize 55-gallon (or other size) filled steel drums.

H. W. Hempel, Marsh Stencil Co., Belleville, Ill., in the course of a talk on "Developments in Marking, Stencilling and Equipment", stated that improper marking of shipments was responsible for 10% of the \$12,000,000 in loss and damage claims suffered annually by American railroads. Adequacy of marking for shipping means completeness, distinctive legibility, and permanence, he explaned.

The foregoing extracts are from but a few of the papers presented in the Conference, yet they vividly stress the important place that materials handling costs have in high production costs, and how these costs can be materially reduced by modern mechanical units and sys-

Furthermore, they tell why leading purchasing agents urge that materials handling and packaging are "must" subjects for consideration by all men in purchasing, for reduced handling costs point the way to lower material costs and lower production costs.

# Material Control System Aids Purchasing



The Process Records section of Central Planning Department keeps track of 2,000 parts in these Acme visible files.

By Dwight G. Baird

Central planning system coordinates material requirements and operating schedules.

Simplified procedures and visible records are effective for quick and positive control.

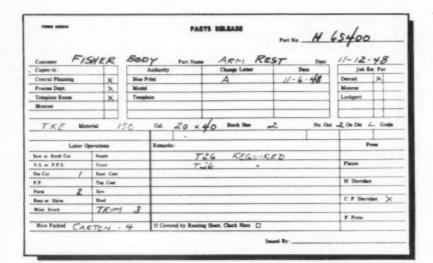
Purchasing Department buys; Planning handles delivery schedules and follow-up.

SIMPLIFICATION of records and procedure at Woodall Industries, Detroit, has resulted in exceptionally close control of the more than two thousand parts produced by the company, and at the same time has reduced errors to a minimum and has cut the amount of time and labor involved in maintaining adequate records by one-third. The principles applied in achieving these results were: reducing the number of records and forms used to the

practical working minimum; eliminating, so far as possible, all duplication and transcribing of records in the materials control procedure; and replacing ledger records with visible card systems.

"Development of this plan really was prompted by our experience in producing aircraft parts during the war," says Kenneth Swanson, Supervisor of the Central Planning Department. "Before the war, we used ledgers and had a rather cumbersome system of record keeping. We posted many parts on the same sheet, then had to cut them apart with scissors and paste them on the proper ledger sheets. If we were using the same system today, we would have to employ at least one-third more parts record clerks, and we wouldn't have anything like as good control.

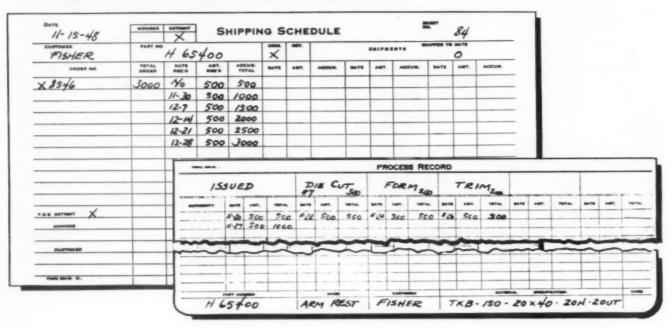
"When the war came on, and we undertook to produce many thousands of different aircraft parts, we



Parts Release form, sent to Central Planning by the Sales Department as orders are received.

The Shipping Schedule details the customer's delivery requirements.

Process Record card maintained in Central Planning. This record is the heart of the control system.



promptly learned that much more extensive records were required. As we were then new in this field, we made a study of the systems in use by established manufacturers and worked out one of our own. Then we began to simplify our system and continued to do so until we felt that we had just as simple a procedure as could be used effectively.

"When the war ended and we returned to peacetime production, we adapted the same system of materials control to our normal production of parts for the automotive, building, refrigeration, appliance, and other industries.

"Conditions now are much less stable than they were prewar. Then we usually would get orders 30 to 60 days in advance, so that we could obtain materials and make the necessary preparations; now we frequently have only from one day to a week to do so. Then we commonly got schedules that were good for 60

days, and there were seldom any changes; now it is unusual to get a schedule that holds good for as much as 30 days. We commonly turn over 400 to 500 schedule changes weekly under present conditions. This, of course, is due in large part to shortages, particularly of steel, and to labor unrest in various industries which supply our customers.

"We have about 2,000 regular parts which turn either weekly or bi-monthly, others which turn monthly in small volume, and occasional one-time jobs. We figure on at least two setups per month on any job that is in volume. We couldn't handle that sort of business without an efficient system.

"To make sure that no job lies dead without our knowing of it, we have our process record clerks pull all jobs that are behind schedule every week. With this system, they can go through 2,000 records in 30

to 45 minutes. Without it—well, I don't know how long that would take. We probably just wouldn't attempt it at all."

The Woodall plant produces an extensive variety of trim foundations and insulating pads, both formed and flat, for the automotive and other industries. It also processes and fabricates Masonite products and some of plastics. The Çentral Planning Department is in charge of scheduling, as well as of materials control. It works closely with the Sales, Purchasing, Accounting, and other departments, and reports direct to the Factory Manager.

As orders are received from customers, the Sales Department fills out a Parts Release form, entering the customer's name, part number and name, material caliper and size, type of tools required, and sequence of operations. This form is passed along to the Central Planning Department, which adjoins the Sales

The procurement clerk in Central Planning keeps track of releases and receipts on each item.

MO		VENDOR		NO.		VEHOOR				UBAGE					REMARK	•	
1	G	Salida	TED	•													
				2								_					
9				•								+					
0							-	-				-					-
	_	96	DERS	10			-		RELEA	828		-		_	RECEIPT	•	
MYE		**	QUARTITY	1	UM. 1974s	DATE	vdm.	P.0 NO.	800.	QUANTITY	ACEUMA POTAL	DATE	PO 100	yte.	MQC MD.	-	<b>MEDIUM 107</b> 0
1-18	/	24/84	3000		3000	11-19	1	2/24	2/0	500	500	11:00	2444	1	6482	500	50
									4-27	500	1000						
									12-6	600	1500						
									44	500	2000	-					
									42-20	500							
					-				42-47	500	3000	-		1			
		~	_	-	_	-		_			-		~				$\sim$
-	9	_									~						
-																	
									-			-	-	-	-		-
				-		-			-			-	-	-			
_		PART NU		-	_	NAM			CUSTON	en l	MATERIAL BPI	ic.		-			
		H 6340			- Co	R			SHE	-	TK8 - 15		20 V 4	-	204 -	2015	LE

ORDER PROM DATE //- /7 48 PO. NO CUSTOMER FISHER			MATERIAL F	REQUISITION	PART TERM F. O.	4S			Material Requ chasing, where and order pla
DATE MEDICALISMS	30	OC .	2c × 40		150	MATERIAL 7KB	<b></b>	PRICE	vised of source on the
00 TO TO	AMBUNT	MELEABER MATE PRO-	10000	9477 000	RECEI	-	ACCUM	7	
11-17	500 500 500 500	A/0 11-27 12-6 12-13	500 1000 1500 2000		IS IS NO		wo	DODALL 7946 E.	INDUSTRIES INC. MCNICHOLS ROAD TRIOIT, MICH.

NO SHEETS

500

200

500

500 500

500

TKE

3000

Material Requisition is sent to Purchasing, where vendor is selected and order placed. Planning is advised of source and order number on the same form.

Consolidated Farer Co MONROE MICH

30 x 40

1/0

11-27

12-6

12-13

12-20 12-27

2484

Procurement clerk in Central Planning issues delivery schedules to vendor and handles follow-up.

500

Department. This is the origin of a job.

12.27

From this information, the process record clerk who handles this customer's jobs fills out a Process Record card, 10 x 6 inches in size, listing at the top the "Issued" information and the operations involved, in sequence, with date, amount, and total under each heading. He also has a record of time studies of every operation, and if he doesn't know these by heart he pencils the hourly production rate under each operation. At the bottom of the card he enters the part number and name, customer, and material specification. He then hangs the card in a visible filing tray so that the information in the bottom section is instantly revealed by merely pulling out the tray. This is of major importance, because in these days of critical shortages it is often necessary to switch materials from one job to another, and this makes

it easy to			prove

those materials that are closely related and, hence, can be transferred with least difficulty.

As other releases of the same part are received, and as production progresses, the record is filled in, showing the various operations in sequence, with daily and accumulative totals. The card is ruled on both sides, to hold 50 or more entries.

This card is the heart of the material control system. By keeping accumulative totals, it is easy to see at any time where and how much material is located ahead of any operation, thus enabling the clerks to pull departmental loads and month-end inventories directly from the cards. So accurate has this sys-

ed to be that physical inventories, which formerly were required monthly, are now taken only annually. In addition, from this book inventory alone, Central Planning is able to report to Accounting how much material is on hand, in process, and in what operations, at the end of each month.

From the Sales Department also comes the shipping schedule, listing the customer's requirements. This is a pre-printed master Ditto carbon form, and Central Planning produces as many copies as required on a liquid duplicating machine. These copies are Dittoed on blank cards of the same size as the Process Record cards. Usually, four copies are required—one for Sales, one for Ship-

11	-20	S	co	250	FIS	HER		4	65	Loc	2
-	20×40		40 150		L TKG			244 00.			
	-	100		PRESE CO.	GPQQLTQA	10000.			MORT INC.		_
	-				8400			86.	out	761	86.
	EVE TV3	2	PROBES	250	200	40	#	1	1	29	0
1	OUT OUT	3	7900								
	-	П	9777Qax								Г
	-		BOWN .								
	-		PROMIN								
	MMA		-								ı
	P. W.		PTAPLE								ı
	MALL COST		981195								ı
	0.000 5.100	П	PAINT								
-	-	4	PACE								1

Original copy of the Production Order is used as authority to get material from Stores. Second copy, on heavy card stock, travels with the work.

The Purchase Order is made out in six copies. Original copy, sent to vendor, has detachable section to be returned as acceptance of order.

		HOLS ROAD, DETROIT S, MICH.	онова но. D-5121
	OFFERS TO PURCHASE, SUBJECT TO ALL TE	THE AND CONDITIONS ON THE FACE AND THE S	ACE HEESOF, FROM
г		7	DATE 12/29/48
	E M. WHITE COMPANY		
1500	BELLEVUE AVENUE	· materials	INVOICE INSTRUCTIONS
L			
date of shipmont. Yaldor she trated harain.	If pay oil outre enderson occruming on occount of in	Constitution of Frager classification, exceptions to the remove packing. He charges will be allowed for con-	re-ror, crafing, basing, duesage or carloge, union
PER SCHEDU	LE TRUCK	F. O. B. OUR PLANT	Terms: 2≸-25TH PROX
Ship To	WOODALL INDUSTRIES INC	DETROIT PLANT	
Req. by	For		Req. No.
QUANTITY	~~~	Beschierron	
~	PART NUMBER W-1,31,02 PER BLUE PRINT DATE SHIP PER SCHEDULE	263 - ноок	Aug.
0,000 PGS.	PER BLIE PRINT DATE	263 - HOOK EO 9/21/48	MALE INDUSTRIES INC.
WOODALL IN Peace & second of the Woodall In Peace & second of the Woodall In	PER BLUE PRINT DATE  SHIP PER SCHEDULE  Northwest shall not be facine for meteral processes and for sequences or incoming schedules or incoming schedules or incoming schedules or incoming social social sequences of incoming sequences of inc	ACCEPTANCE  ACCEPTANCE  PURCHASE ORDER	Date
WOODALL IN Prese E. McConference: We haveby actinating learner to the face on	PER BLUE PRINT DATE  SHIP PER SCHEDULE  Northead shall not be liable for material processes, find required pricesses, find required pricesses, find required pricesses, find the conduction of the find of the conduction of the con	ACCEPTANCE F PURCHASE ORDER  D-5121 which was as no verbal or written agreement or under	Date
Woodall In Present of the National State of the State of	PER BLUE PRINT DATE  SHIP PER SCHEDULE  Northwest shall not be facine for meteral processes and for sequences or incoming schedules or incoming schedules or incoming schedules or incoming social social sequences of incoming sequences of inc	ACCEPTANCE  ACCEPTANCE  PURCHASE ORDER	Date

PURCHASE ORDER

ping, and two for the process record clerk. The latter hangs one copy in his visible-file drawer facing the corresponding Process Record card. He then transcribes to the second card the material specifications and passes it across the room to the material procurement clerk, who sets up his record on a visible-file card of the same size. This card provides spaces on both sides for listing vendors, usage, remarks, orders, releases, and receipts. There is space at the bottom edge for the part number and name, customer, and material specifications.

The procurement clerk then originates a Material Requisition, which he sends to Purchasing, retaining a copy for his own file. The Purchasing Department selects and assigns a vendor and a purchase order number, and makes the buy, returning this information to the procurement

clerk on the Requisition.

The procurement clerk then issues a schedule to the vendor, showing the material specifications, purchase order number, amount, and date required. He also takes care of any follow-up that may be re-

quired thereafter.

When he receives notice of receipt of raw stock, the material procurement clerk posts this on his record card, then assigns the material by making out a Production Order form in duplicate and turning both copies over to the process schedule clerk. This form is 5 x 5 inches and shows the amount of material, specifications, and location of material. It also provides spaces for scheduling operations.

The process record clerk posts this material information to the issued column of his record card and sends both copies of the Production Order to the shop. The original copy, on regular paper, goes to the Raw Stock or Stores Department, while the second copy, on heavier card stock, is hung on the press schedule board in the department which is to do the first operation. After the first operation has been completed, the original copy of the order is returned to the process record clerk, showing the quantity run and the operator's number. The second copy travels with the work from department to department, as a means of identification.

The process record clerk then schedules each successive operation by making out a Daily Production Schedule, and is notified of the completion of each operation by receipt of a Daily Production Report, which he receives at the end of each shift from the department foreman, and

enters it on his Process Record card. He also receives a copy of all shipments daily and posts these on his Shipping Schedule card. He thus has a complete record of dates and amounts of each operation, from the time the raw material is issued until the finished products are shipped.

"If anyone asks us where any particular job is in the shop at the moment, as they frequently do," Mr. Swanson said, "we have only to flip open this card record and we can tell him in a moment. Having the time studies on each machine, and a record of the scheduling right before us, we know just how long it will take to complete any operation. Or we can pull a department time load from the Process Cards

(Please turn to page 344)



Purchasing Agent Transformer Division Westinghouse Electric Corp. Sharon, Pennsylvania

THE most important thing in purchasing today is rarely mentioned and almost never discussed. It is the one part of the buyer-seller relationship which is never negotiated. Yet, unquestionably, this factor is the key to the distribution of material in short supply. Mistakenly it is sometimes called loyalty. Actually it can be more accurately defined as the stability of the buyer-seller relationship after cyclical business changes.

Not long ago the sales manager of a company offered a new customer immediate delivery on a very scarce commodity. He explained that the required capacity was available because he had quit selling certain industries. Obviously, customer-supplier loyalty was the controlling factor, since the new customer's business was if anything less profitable. An accurate appraisal of this so-called loyalty is particularly important today.

Every purchasing agent knows a dozen cases of conflict between immediate interest and loyalty. This applies to buyers and sellers alike. If loyalty is such an important business factor, then it is much better to appraise it honestly rather than leave it to chance or confuse it with personalities.

It is probably safe to assume that there is no such thing as abstract loyalty in customer-supplier relations. If it exists, it is a very minor factor. Even business based upon personal relationships will be short lived if it is opposed to the long term best interests of the companies involved. Business loyalty is primarily long term self interest. This is almost a definition. Your company's best interest embraces many diverse and intangible factors. It includes assurance of supply, quality, and cost. It may include intangible factors like

When stability and immediate interest are in conflict, the buyer must face the issue.

How to evaluate the importance of a supplier in respect to a particular item.

How to evaluate the importance of a customer in the supplier's selling policy.

public relations, trade reputation, reciprocity, and technical cooperation. Yet the profit and loss statement is the common denominator.

As a buyer, ask yourself these questions:

1. Is the price level in your supplier's industry stable and slow to change or volatile and set strictly by the market?

2. How rapidly can your supplier add capacity?

How important to you is the cost of a given supplier's materials?
 How important to you is assur-

ance of supply on that material?

5. How desirable does your supplier find your account on a long term basis when he compares it with other customers?

6. What is the personal relationship between you and your supplier? Or to phrase it another way, how well do you understand each other's business, each other's policies and each other's point of view?

The answer to the first two questions will identify those commodities and industries in which loyalty can be a controlling factor.

The next two determine the price you can afford to pay for your supplier's loyalty.

The answer to the fifth question will determine how much your loyalty is worth to your supplier.

The sixth is the most important of all because it is the key to the manner

in which all the others will affect you.

Loyalty can only be important when price is eliminated as a factor in choosing customers or suppliers. If prices were always set completely by the market, there would be no problem. If steel went to the highest bidder like wheat, there would be no steel shortage, no such thing as allocation, no obligations and no customer-supplier loyalty, only a price problem. Prices would go so high that the supply would be sufficient for those still able to buy. You wouldn't feel that anyone was doing you a favor by selling to you just because you were willing to pay the most. Likewise, in depression there would be no problem for the buyer. The price, of course, would go so low that the seller wouldn't care whether he sold you or not.

But if prices do not change as fast as the market, then certainly in times of shortage you will be unable to obtain material just because you are willing and able to pay the price. And it is just as sure that in times of depressed business you will choose your suppliers chiefly upon intangibles such as loyalty.

Point number one is this: Loyalty is an important consideration if the price level is sticky and slow to change

It is not coincidence that industrial shortages occur most frequently in commodities with stable price characteristics. New capacity costs tremendous sums and requires years to build in some industries like steel. The same factors which make it difficult to increase capacity are largely responsible for the price characteristics. Any difficulty in rapidly adjusting capacity almost guarantees periodic shortages. It also puts a premium upon stable prices and stable volume.

In industries such as steel where new capacity takes years to build, such new capacity is very expensive. The resulting high fixed cost makes profit fluctuate very sharply with volume even at a constant price. Sufficient reserve capacity to avoid occasional shortages is just too expensive because most of that extra capacity would lie idle for years at a time. But if there could never be any shortage, there would be no value in buyerseller loyalty. It is important only if the tables can turn occasionally.

Point number two is this: Customer-supplier loyalty is apt to be very important if capacity is hard to increase and the cost of new capacity is

great.

These two things, price levels and the cost and time required to build new capacity, determine when and where loyalty can become a major factor in determining buyer-seller relationships.

### Value of a Supplier

As a buyer, how much can you pay for your supplier's lovality? Remember, the loyalty of your supplier is measured mostly in terms of assurance of supply. If assured supply is very valuable compared to low cost, then you can afford to pay hard cash.

For example, at this plant we pay a definite price premium for a certain special screw. Its cost is infinitesimal compared to the cost of the finished apparatus. Without that screw the entire plant is tied up. There is no substitute. It will be necessary for one supplier to give that screw absolute priority on material, machines, and men, to keep us supplied. We can afford to pay almost any price to insure supplier loyalty on that item.

On the other hand, a quite similar screw has a dozen substitutes. If it is out of stock, it is inconvenient but not necessarily serious. Obviously, supplier lovalty is far less valuable on such an item as this.

Regardless of the importance of assured supply, a limit still exists on the price you can pay. You can pay the most if:

1. The cost of the item is small compared to total cost of production. 2. Your product profit margin is

3. Fixed production costs and overhead are large cost elements.

4. Few substitutes are possible. Conversely, you can pay very little

1. The cost of the material is a large part of your production cost.

2. You have little overhead or

fixed cost.

3. You can quickly find satisfactory and reasonably priced substitutes.

4. You must operate on a narrow

profit margin.

Point number three is this: Supplier loyalty usually costs money sooner or later, and there is a definite limit on the price you can pay for it.

#### Value of a Customer

Regardless of the importance to you, your ability to obtain supplier loyalty will depend on your value as a customer to him, not upon his value to you. If loyalty means material when needed to a buyer, then to the seller it means sales volume when he

The value of your continued busi-

ness will be greatest if:

1. Your business is growing. A favor now to a growing company can bring proportionally greater business later when it is needed more.

2. Your business is stable. If your requirements are large only when your supplier's business is good, then you are not as desirable as the customer whose business is more uniform and stable.

3. The product you buy is one of the more profitable items your supplier sells. Cream is worth more than

4. Your supplier has high overhead and fixed costs. Maintenance of sales volume during depressed business will be much more important than temporary high profits now.

You can make a shrewd appraisal of the chances of obtaining your supplier loyalty if you know enough about the value of your business to him when compared with other po-

tential customers.

This appraisal will be valid and realistic, however, only if you know personally the temperament and point of view of the men who make the policies and the sales decisions. Loyalty is like credit. The reputation and integrity of the debtor is often all important. In many ways loyalty is a medium of exchange which becomes important only when the sales price isn't set by supply and demand. But it must be treated quite differently from a cash transaction because it is essentially a transaction in futures. Furthermore, it is an invisible, unwritten, and frequently unmentioned transaction. That is why personalities and apparently unrelated company policies can so often be the controlling elements in a theoretically impersonal transaction.

### Dealing in Futures

Would you accept a verbal promissory note from a total stranger? Neither would your supplier. Today there are many sellers of steel, pipe, nails, paper, lumber, electrical equipment, and thousands of other items who are unavoidably choosing their customers and setting limits on their sales two, five or ten years from now. The reason for their choice in almost every case is the appraisal of the long term affect of the considerations we have mentioned. Likewise, five to ten years ago as a buyer you dealt yourself the hand you are playing now. Either as a buyer or seller you must be a dealer in futures if the items you buy or sell are not sold on price alone. Like the prudent investor, you need to investigate much besides the current return.

Because you are dealing in futures, you must know the temperament, policies, and point of view of the men who make the sales decisions affect-

If you don't know the answer in your case to the questions we asked, you aren't fully on top of your job. If the answers are favorable and your suppliers don't know it, you are probably suffering severely because of their lack of information. If you honestly and impersonally analyze your claim to your supplier's loyalty, you will probably find good reasons why your supply has been getting better or worse in the material you find in shortest supply. The reasons will have little to do with your "base period" before the war except as that indicates what you may do again in some future buyer's market.

When that "day" comes and the tables turn, don't take out your spleen on some innocent salesman. What is happening to you today is not chance or the result of personal likes and dislikes. There is a real reason. And if you know your business, you are out selling your suppliers every day on the value of your business to them.

Even if we can't put a dollar and cents price tag on loyalty, we can appraise its importance, its value, and its cost quite accurately. It all boils down to an old truism: It pays to know your supplier's business, policies, and personnel as well as your own business.

# How Buyer and Supplier Can Work Together

By C. H. Holland

General Electric Company
Riverside, California

A sales executive analyzes the relationship between customer and supplier.

Buyer and seller have a mutual interest in efficient handling of the order.

Some common sense suggestions on purchasing for greater value and better service.

YOUR function as a purchasing agent is to buy effectively, to meet your requirements for equipment and supplies, to maintain supplier relationships, and to operate with a reasonable purchasing staff. This function of yours is closely linked with that of your suppliers, since their function is to produce equipment when it is needed, at a reasonable profit, of a quality and design to meet your requirements; to develop new equipment to better fill your present needs and to anticipate your future needs; to give your organization technical assistance, prompt information and service; and to do all these things with a reasonable selling staff at a reasonable sales expense.

When I analyze these basic functions of purchasers and suppliers I can readily appreciate how closely they should be correlated and how close are their spheres of activity. If the purchaser can save time and effort for the supplier, not only willthe supplier's expense and cost be reduced, but a good share of these savings will be passed on to the purchaser in the form of lower prices, better engineering service, more prompt and complete proposition and order service, better product application and development and even better shipment.

Let us start with the routine of handling quotations and orders. Naturally, quotation requests should be complete so that the bidder will know exactly what is to be required of him. One thing that is sometimes omitted is an indication as to when bids are desired. Such a date should of course allow adequate time for bidders to properly prepare complete and informative

propositions. Notations such as "Quotation required as soon as possible" or "Return Mail" should, in general, be avoided. If the bidders know what is required of them in this respect, you can be sure that they will do everything possible to meet your requirements. If, for some reason, they feel that they cannot meet the prescribed date, such procedure will give them an opportunity to discuss it with you.

In these days when delivery is still an important factor in placing business, it is helpful to the supplier to have some idea as to what shipment your construction or maintenance programs might require. There is no need for a supplier to deliver equipment prior to the time you need it and thereby deprive some other customer of equipment that might be sorely needed. You can readily see that cooperation on this point will be of mutual advantage to all suppliers and all purchasers concerned.

My experience indicates that quotation forms are usually adequate. However, there may be cases when the terms indicated on either quotation request forms or purchase orders may seem somewhat unilateral to the supplier. If such a condition exists, it will always expedite dealing with your regular suppliers to have some sort of blanket agreement regarding terms and conditions of sale that is satisfactory both to you and the supplier concerned.

Some utilities have put a great deal of emphasis on the preparation of specifications which deal in considerable engineering detail regarding the design and detailed construction of the apparatus to be supplied. We believe that it would save considerable time and money if they would tend toward a functional specification and permit the manufacturers to work out the details and use their ingenuity to best meet the functional requirements. Then the utility or other customer is in a better position to select the equipment which appears most favorable to their requirements.

You recognize, of course, that if you and your suppliers do a complete and detailed job in the quotation stage, there should be very little question as to the completeness of information on the order.

Naturally, super-rush orders are to be avoided unless there is a real emergency, since such orders not only complicate the supplier's schedules but seriously complicate your own purchasing routine and increase your purchasing expense.

It is often necessary and essential that certain important or critical orders be watched rather closely so that a well correlated construction program can be scheduled. Your suppliers are interested to help you with the scheduling of such programs and, I know, will be glad to help you expedite any bottle-necks that might occur. However, as you well know, the expediting of orders not only takes considerable time and expense, but tends to upset your supplier's production operations, which is exactly what you are trying to avoid. Therefore, let me suggest that you expedite only orders that have to be expedited, and ask us to do so with complete information and full knowledge of what is being accomplished.

Above all, expediting through

Abstract of an address given before the Pacific Coast Electrical Association.

two or more channels is to be avoided as this is a serious duplication of effort and a supplier may get two, three, or more requests from different sources in a large organization to different persons in a large supplier organization, resulting in the factory receiving multiple requests for the same information. Naturally, your purchasing 'organization is the logical place to funnel any requests for expediting an order.

Practically all purchases of major equipment are influenced by more than one individual, including essentially, engineering, operating, and purchasing personnel. Therefore, whether or not it is formally entitled "committee purchasing" most major negotiations are decided by a group, rather than by a individual. Some companies have rather formalized their method of group purchasing by having representatives from the interested departments present when suppliers present their proposition on large and important negotiations. formalized procedure can have the advantage of saving both the supplier's time and customer's time. However, I understand that there are some practical considerations involved that make this method of purchasing somewhat less attractive than it may appear on paper.

All competitive suppliers are naturally interested in the outcome of a particular major negotiation or the changes or trends of a purchasing policy in regard to supply items purchased on a routine or repetitive basis. It seems to us that business courtesy dictates that whenever suppliers are asked to furnish formal bids, the results of the negotiation should be made known to these bidders. This can be done without divulging information which should be considered confidential between the seller and purchaser. However, it seems not only courteous but of definite benefit to both the supplier and purchaser, that the unsuccessful bidder should be given the honest reasons why he was not awarded an order. In this way, the unsuccessful bidder is encouraged in our system of free, competitive enterprise, to improve wherever he is falling short.

I am sure you will find that your suppliers wholly respect your judgment in making purchases for your particular company. And if they know where they have not measured up, I am sure it will encourage them to improve their position the next time a request for quotation is

made on a similar equipment. It may not only be a question of price or shipment but it may be a question of engineering preference in regard to design or some other product features. The sooner your supplier realizes why he is not competitive in one of these categories the quicker he has an opportunity to be out in front of his competi-

You are naturally interested in maintaining adequate sources of supply. The advantages and disadvantages of one source of supply could be the topic of a great deal of discussion. From time to time, all buyers probably tend more or less to obtain certain classes of material from one source of supply. It seems to me that only one thing should dictate to the purchaser where his business should be placed. He is interested in getting the greatest value for the dollar spent. And in deciding who is in the position to give this greatest value for the dollar, several manufacturers should initially be considered. Quality from an engineering point of view is one of the important considerations, but it is not the whole story by any means. Such factors as ability to service equipment, experience of the manufacturing organization, and application engineering service are of real value to the purchaser.

Another important consideration is the contributions of the supplier to the industry as a whole. The utilities purchaser may well consider what a particular supplier is contributing to the industry in the way of research, promotion of electric load and other factors that bring benefits to the electrical industry and all the electrical utilities.

Manufacturers should certainly be encouraged to offer advantageous alternatives. Even after specifications are written and quotation requests are issued, possible alternatives may arise which will be particularly advantageous to the utilities. Naturally, if such alternatives can be eliminated before quotation requests are issued, the supplier's time and the purchasing time can be saved, so I am referring primarily to alternatives suggested by the suppliers, rather than a quotation request which may indicate a multitude of alternatives, because it has not been determined exactly what equipment is required.

There are naturally particular problems regarding the smaller items which are purchased on a repetitive basis. Unless all purchasing factors, including inventory

control, are considered, there usually results too many small orders placed too late. Orders that are small in dollar value frequently place an unnecessary burden on you and your supplier. In some lines they eliminate worthwhile quantity discounts and increase the possibility of being out of stock. Orders placed too late saturate your expediting organization and reduce your opportunity to negotiate.

Usually, ordering too little costs much more than ordering too much. Of course it is necessary, on your major items, to have a safety stock so that you will be sure not to run out of an item entirely. This safety stock requirement varies with procurement time. The question of procurement time and the trends of availability of certain repetitive items should be discussed frequently with your suppliers, so that you are prepared to vary your policy as availability changes.

We have all learned a great deal concerning advanced buying of repetitive items during the past few vears. However, as manufacturers are gradually coming into a short shipment position on most of these items, it may be well to review purchasing policies in regard to these repetitive items on the basis of purchasing cost, rather than merely availability. You will find that it would still pay you nice dividends to continue to plan your purchasing well in advance on these repetitive items and take the suppliers into your confidence, relying on them to furnish accurate information regarding availability.

Your suppliers are certainly interested in inventory control because they are interested in an even production flow in their factories with gradual trends-either increasing or decreasing-allowing the greatest utilization of investment and providing steady employment for trained personnel. Such smooth operation enables the manufacturer to offer you better equipment at a lower price. Therefore, we believe that long-range planning in the purchasing of repetitive items warrants your continued careful study and consideration with the use of larger and less frequent orders, consistent with inventory cost and purchasing cost.

Obviously, purchasers and suppliers have many mutual interests. In working together, if both realize these mutual business relationships fully and operate on a frank and honest basis, the best methods are

bound to be evolved.

# Where We Stand

P	ROD	UCTIO	NC
220 210 200			
180 170			
1.00	DEC.	JAN.	FEB.

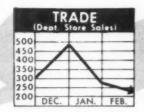
### Today's Business Trends As Reported In Current Statistics

DEC. JAN. FEB.	
Industrial Production Index	1935-3
Steel Production (Weekly)	000 ne
Electric Power Production	mil KW
Bituminous Coal Production	000 ne
Auto, Truck & Bus Output	units
Petroleum Output	000 bk
Engineering Construction	000 \$

BASE	LATEST	MONTH AGO	YEAR AGO	% OF	CHANGE IN
1935-39==100	191*	192	193	— 0.5	— 1.0
000 net tons	1,845	1,831	1,671	+ 0.8	+10.4
mil KWH	5,778	5,692	5,412	+ 1.5	+ 6.8
000 net tons	11,350	11,480	11,350	- 1.1	_
units	100,445	95,507	80,299	+ 5.2	+25.1
000 bbls	5,351	5,454	5,333	- 1.9	+ 0.3
000 \$	162,404	127,101	118,995	+27.7	+36.5
					*Estimated

-	PR	ICES	
200 190 180 170 160			
140	DEC.	JAN.	FEB.

TORC. JANIA. TED.						
All Commodities (Bur. Labor Statist	ics) 1926=100	156.9	160.5	160.9	- 2.2	- 2.5
Farm Products	1926=100	162.5	174.3	182.5	- 6.8	-11.0
Metal & Metal Products	1926=100	178.3	175.3	154.8	+ 1.7	+15.2
Building Materials	1926=100	200.4	200.9	192.2	- 0.2	+ 4.3
Steel Billets, Pittsburgh	gross ton	\$58.24	\$58.24	\$45.00		+29.4
Steel Scrap, heavy melting, Pitts.	ton	38.75	40.75	40.50	- 4.6	- 4.3
Copper (Electrolytic)	lb.	.23 1/2	.23 1/2	.21 1/2		+ 9.3
Cotton, mid., 15/16"	lb.	.3356	.3325	.3330	+ 1.0	+ 0.8
Rubber, (Rib-smoked sheets)	lb.	.181/4	.19 1/8	.20 1/2	- 4.5	-10.9
Wheat (No. 2)	bu.	2.52 1/4	2.54	2.64 3/4	- 0.7	- 4.7



Dept.	Store	Sales	Index	(Fed	l. Res)	
Comm	ercial	Failur	es (Du	n &	Bradstreet)	
Freigh	t Carl	oading	gs			

1935-39=100	231	274	240	-15.6	- 7.9
no.	145	128	97	+13.2	+49.4
cars	682,143	721,507	746,936	5.4	- 8.7

### FINANCE

Stock Prices (Standard & Poor's)	1926=100	115.7	122.3	110.3	- 5.4	+ 4.9
Bank Clearings (New York) -	mil \$	6,538	6,812	5,755	- 4.0	+10.4
Federal Reserve Credit	mil \$	22,836	23,193	21,732	- 1.5	+ 5.0
Currency In Circulation	mil \$	27,557	27,919	27,556	- 1.2	-

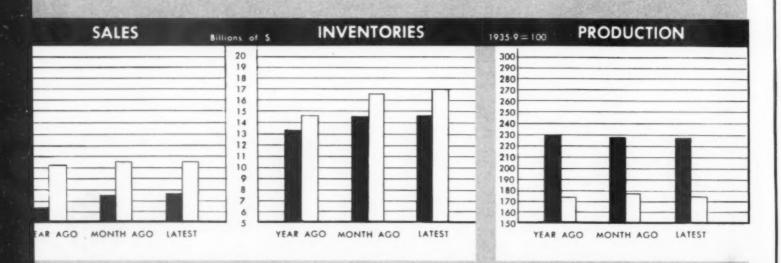
### MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

		1947 1948					
Indexes of Value of Manufacturers' Sales							
(Average Month 1939 = 100)	Dec.	July	Aug.	Sept.	Oct.	Nov.	Dec.
al Manufacturing	330	308	341	370	354	353	3594
Durable Goods	360	333	368	404	398	400	4011
Iron, steel & prod	331	301	362	389	393	386	
Nonferrous metals & prod	423	350	421	487	456	489	
Electrical machinery & equip	470	410	414	505	472	496	
Machinery, except electrical	347	317	347	381	359	354	
Automobiles & equipment	424	438	437	474	503	510	
Transportation equip. except autos	514	457	503	528	540	561	
Furniture and finished lumber prods	275	226	259	290	270	258	
Stone, clay and glass products	236	267	289	298	302	288	
Other durable goods	272	248	282	295	268	263	
Vondurable goods	286	294	325	350	328	322	328
Food and kindred products	313	310	315	359	322	310	
Textile-mill products (excl. apparel)	327	269	342	369	344	340	
Leather and products	286	256	309	325	283	270	
Paper and allied products	312	301	342	355	348	349	
Chemicals and allied products	312	292	331	355	322	309	
Petroleum and coal products	318	337	341	345	345	351	
Rubber products	307	339	351	348	344	330	
Other nondurable goods	305	254	341	361	344	349	
Indexes of Book Value of Manufacturers' Inventories							
(Average Month 1939 = 100)							
al Manufacturing	261	281	283	285	287	290	295
Durable Goods	277	290	291	296	297	302	306
Iron, steel & prods	204	226	227	232	236	241	
Nonferrous metals & prods	251	271	276	283	287	283	
Electrical machinery and equipment	370	398	396	402	401	402	
Machinery, except electrical	285	298	298	302	303	306	
Automobiles and equipment	497	475	476	490	482	489	1
Transportation equip., except autos	623	635	629	634	639	665	
Furniture and fin. lumber products	239	259	261	252	247	253	
Stone, clay and glass products	170	159	166	174	174	179	
Other durable goods	217	183	184	189	192	194	
Nondurable goods	248	274	276	277	279	281	287
Food and kindred products	250	237	240	229	238	251	
Textile-mill products (excl. apparel)	224	261	262	257	256	254	
Leather and products	223	264	258	245	244	254	
Paper and allied products	268	305	311	315	317	314	
Chemicals and allied products	271	284	282	278	280	286	
Petroleum and coal products	178	207	214	224	226	232	1
Rubber products	257	289	287	288	284	288	1
Other nondurable goods	293	405	407	418	405	392	
	100)						
Indexes of Value of New Orders (Average Month 1939:			1		1	1	1
	252	246	251	272	250	249	
I industries	252 292	246 291	25 1 287	272 309	250 277	249 278	N.A

Source — Department of Commerce, Revised Series

N. A. - NOT AVAILABLE \*ESTIMATED

### SALES, INVENTORIES AND INDUSTRIAL PRODUCTION



**DURABLE GOODS** 

NON-DURABLE GOODS

### Straws in the Trade Wind

- Permanente Metals Corporation has opened its aluminum wire and cable production schedules to all users of aluminum electrical conductor throughout the nation. The company is ready to review specific requirements for production of ACSR at its Newark, Ohio mill . . . Reynolds Metals Company has contracted to supply the National Rural Electric Cooperative Association with most of its aluminum-wire needs for the next 8
- California's steel capacity has risen 147.7% since 1938 placing it in the first ten states for steel production, according to the American Iron and Steel Institute . . the United Nations Economic Commission for Europe has reported that in 1948 Europe west of Russia produced 47,000,000



tons of steel, a gain of 29% over 1947 . . . Commerce Department figures show iron and steel scrap imports from Germany reached 150,270 tons in January, an increase of 42% over December . . . Russian shipments of manganese and chrome ore to the United States practically doubled in December, rising from \$1,-400,000 in November, to \$ 2,700,000 in December.

- Factory sales of motor vehicles in this country reached 5,285,425 units in 1948, the second highest figure in the industry's history. The figure was exceeded in 1929, when factory sales amounted to 5,358,420 vehicles. Export totals for 1948 showed a falling off of about 15%.
- Industrial gas users in scarcity areas have little prospect of having enough fuel in peak winter seasons for several years, according to the National Security Resources Board, despite the fact that the industry has an expansion program under way that should increase its production 50% by 1953.
- United States has arranged to purchase about 10,000 tons of palm oil worth about \$3,970,000, representing nearly 50% of the exportable surplus of the commodity on Sumatra. The oil, of great importance in the tinplate industry, will be used for strategic stockpiling purposes. Because of its high quality it can be stored in bulk for a long period of time.
- American Viscose Corp. has announced plans to double the capacity of its cellophane plant at Fredericksburg, Va. The new capacity is expected to bring the company's output to about 100,000,000 pounds a year. Present over-all capacity of the industry is about 220,000,000 pounds a year.
- Braden Copper Co. has begun a three-year improvement plan involving an investment of \$130,000,000 in its El Teniente mine in Chile . . . Chile Exploration Co. expects to complete this year a new \$60,000,000 sulphide copper refinery, said to be the largest of its kind in the world.

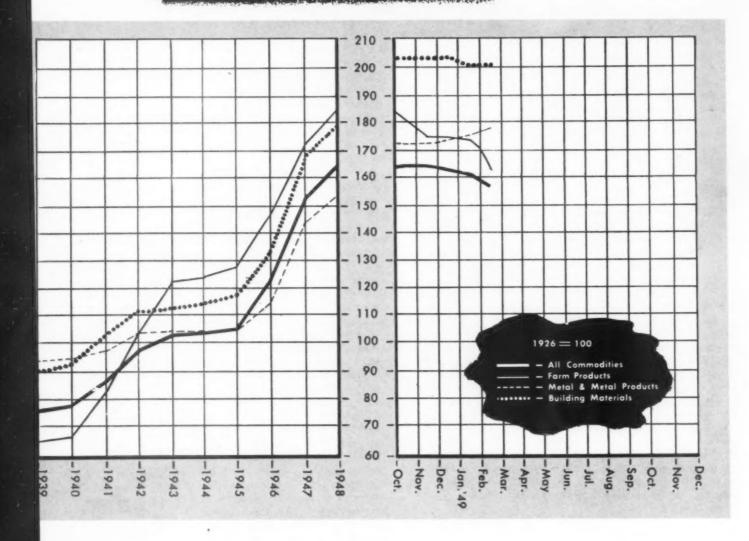
- Senator Byrd of Virginia has estimated that the Federal payroll increased during 1948 at the rate of 297 persons per day. According to his figures, the number of persons working for the government at the end of the year stood at 2,104,000, compared with 1,995,000 a year earlier.
- Expenditures for new construction in January were 9% less than in December, according to the Department of Labor, although they topped expenditures for any other January since 1939.
- Ohio Public Service Co. has opened a \$10,000,000 addition to its electric power generating station at Lorain, Ohio, raising capacity to 100,000 kilowatts, and tripling the previous rate. The addition is part of a 5-year \$50,000,000 construction program of the company.
- A rise in cement production to a record 210,000,000 barrels in 1949 has been predicted by the executive secretary of the National Ready Mixed Concrete Association. He declared, however, that spot shortages will probably continue.
- Dispute over control of the Government-owned \$28,000,000 blast furnace in Cleveland has been settled by a five-year agreement between Republic Steel Company and the Kaiser-Frazer Corporation. The agreement calls for: operation of the furnace by Republic: continuation by the steel company of, a supply of merchant pig iron to



consumers in northeastern states; an allocation of approximately 12,000 tons of pig iron monthly to Kaiser-Frazer at regular market prices; construction of a new 200-ton open-hearth steel furnace in Cleveland, to be paid for by Kaiser-Frazer, the output of which will be purchased by the automobile company in the form of sheets at regular prices.

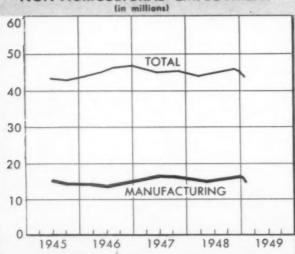
- Spokesmen for the National Association of Home Builders have stated their industry will attempt to match this year the 1948 record of nearly a million new homes, but declared that the demand for half again that number voiced in some quarters was probably beyond the capacity of the industry at present.
- Retail sales of groceries, radios and electrical household appliances set a record in 1948, but jewelry sales dropped off 8% from 1947, according to a report of the Department of Commerce.
- Motor carriers operating in the northeastern section of the country have been denied an immediate 10% emergency increase in rates for transporting property by the Interstate Commerce Commission. A petition for a long-range increase of 25% in all class and commodity rates is still under consideration.

### The Price Picture



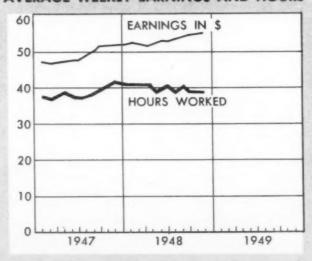
### Employment & Earnings

### NON-AGRICULTURAL EMPLOYMENT



### SOURCE U.S. DEPT. OF LABOR

### AVERAGE WEEKLY EARNINGS AND HOURS



### "QUOTES"

"What this country needs, and right now, is for business and government to give these statisticians and economists a 90-day leave of absence. Too much confusion has been caused by conflicting statistics and too much propaganda about a business depression. American salesmen and advertising men can help swing our economy in the right direction if a lot of so-called experts will let them alone."

 L. A. McQueen, vice president and chief sales executive, General Tire and Rubber Co.

"Current business uncertainty is merely a 'burp' in the post-war economic baby, not a 'belly-ache'. I think the baby has been taking the bottle very fast since the war."

> A. D. H. Kaplan, Brookings Institution, before the Joint Economic Committee of Congress.

"In most business circles a 'sidewise' movement is interpreted as standing still, and the forerunner of trouble, for seemingly either there must be expansion or contraction. In many respects general business moved 'sidewise' in 1948, and there is reason to expect a continued rough over-all balance of forces of inflation and deflation for some months. Consequently, business expectations—which play a key role in determining the level of aggregate investment and employment—may well remain clouded and uncertain for some time."

-Federal Reserve Bank of Chicago

"The enlargement of productive capacity is so essential to continued maximum employment and production that neither the concealed dangers in any given plan nor the required scope of Government intervention should prevent action that will be effective."

—John D. Clark, member, President's Council of Economic

Advisers

"The present confusion in public and private thinking cannot be clarified nor resolved except by the recognition of the fact that the problem is basically not one of economics at all but one of the philosophy of government and morals. Restore the constitution and its guarantees of liberty and property; preserve liberty under law and the rights of the states against centralized power; restore free markets for goods and money; prevent monopolies wherever they exist, public or private; and the national income will then enable us to pay our huge debt with honest dollars, and we may again set ourselves on the road to such achievement and general well-being as will once more astonish the world."

—Frank E. Holman, president,

American Bar Association

"The primary task facing American businessmen today is to acquaint the people of our country with the facts about businesss and with the great achievements and virtues of our American system to insure that those who would establish a new order of things in the United States will forever remain in the minority."

—Irving S. Olds, chairman

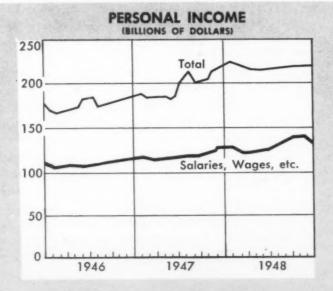
of the board, United States Steel Corporation.

"I do not attach too much significance to the very short-line swings in prices from month to month. I do attach much significance to the fact that the cost of living is still hovering within about 2% of its all time peak, has shown no pronounced trend downward, and is now about 74% above June, 1939."

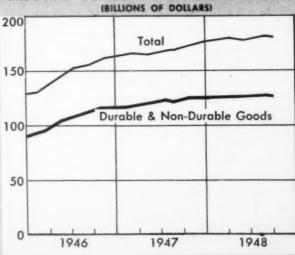
 Leon H. Keyserling, member, President's Council of Economic Advisers.

## Personal Income & Expenditures

ANNUAL RATES



### PERSONAL CONSUMPTION EXPENDITURES



### Materials & Markets

STEEL



The trend toward a more normal steel market noted in the past couple of months has speeded up more than was expected, and a better balanced situation between supply and demand by midyear is being talked of. Demand is still good for all types of products, but what is missing from the pic-

ture now is the frantic activities of consumers to get steel at almost any cost. Numerous cancellations have been reported, and a general tendency to check inventories before making new commitments noted.

The most potent factor of all is the consistently high production of the steel mills, now operating on an annual basis of more than 97,000,000 tons. At this writing the operating rate of steel companies having 94% of the steel capacity of the industry had been at 100% or higher for five straight weeks. Steel production in January reached the highest levels in the history of the industry, when the output of ingots and steel for castings reached the enormous total of 8,-172,236 net tons. Production at that rate, combined with a gradual filling of pipelines throughout industry generally, appears to be a guarantee against return to the extremely tight situation experienced in the past few years. What would happen if severe crises in international affairs affected the rearmament plans of our country and those of the Western nations is another matter, but as the defense program stands now it is not looked upon as changing the picture outlined above.

Scrap prices dropped noticeably again last month, but trade circles expressed doubt that the decline will be reflected in steel prices for some time. Despite the fact that, traditionally, steel company costs went down about a dollar a ton for every four dollar a ton drop in scrap prices, other elements now play a bigger part in determining steel prices. Costs other than scrap are still high; a new round of demands by labor, either for higher wages or increased security benefits is in the wind; and continuing large outlays for expansion are planned.

#### NON-FERROUS METALS

Prospects for an improved copper supply were brightened in the first week of February by the announcement that the strike at the Kennecott Copper Mine, Bingham, Utah, had been settled. The Kennecott mine, one of the largest copper mines in the world,

had been closed since October 24, 1948. The strike had been causing a loss of about 23,000 tons a month. This figure, combined with the estimated 10,000 tons a month for the Government's stockpiling program had been keeping supplies extremely tight. Relief will not be immediate, however, as the effects of the return to production at the Kennecott mine are not expected to be felt for a few months. Copper deliveries to consumers in this country in January were at the lowest average level since before the war, according to figures from the Copper Institute.

A bill suspending for two more years, to March 31, 1951, the import duty on copper, was passed unanimously by the House of Representatives on February 16. The move is intended to encourage imports of the metal.

Barring prolonged strikes or extreme emergencies, the supply of lead may be counted on to improve gradually during 1949, according to industry spokesmen. In 1948 mine production in this country reached 380,000 tons, although some 30,000 tons were lost due to strikes. Imports went up to 305,000 tons despite strikes. Production from scrap stayed near its all-time record and approximated 470,000 tons. This high rate of production is attributed in part to the rise in price from 15c a pound a year ago to the 21½ c level it reached on November 1 and remained since.

Factors in the lead supply outlook for the coming year are the expected increase in mine production, the huge supply of scrap that has been built up by heavy consumption during the past few years, and the anticipated continuation of heavy imports. According to the



Lead Industries Association, it appears likely that the suspension of the tariff on lead, which passed Congress last year and which expires on June 30, will be extended for another year unless there is some drastic change in the situation. About 70,000 tons of lead are going into the military stock-

pile during the current fiscal year ending June 30 next, and it is believed that stockpile requirements will be increased if the supply and demand picture permits.

Demand for aluminum continues strong, as do the factors holding back adequate increases in production. Testifying before the Congressional Joint Economic Committee recently, Secretary of the Interior Krug stated that aluminum production, which requires huge amounts of electrical energy, was about 30% below requirements at a time when great plants in New York,

Pennsylvania and other places were forced to remain idle because of a lack of power.

Trade sources feel it is a little early to try to interpret the significance of the announcement by Permanente that it was accepting inquiries from users of aluminum cable and other conductors (see "Straws In The Trade Wind", page 125). The company will have to increase its ingot capacity to carry out this program, and this may be the first faint sign of an easing in the aluminum market.

Production of primary aluminum in the United States showed an increase of about 100 million pounds in 1948 over 1947, according to the Aluminum Association.

### CHEMICALS

Prices on ethyl alcohol continued the downward trend they have shown for several months following declines in molasses prices, and began to approach the 1941 level. A number of leading producers at midmonth lowered the price of pure tax-free ethyl alcohol from 28 cents to 25 cents a gallon in tank cars. Two of the producers stated that there had been no change in the price of synthetic methanol, which is interchangeable with alcohol in anti-freeze. Widespread use of methanol for that purpose last year is believed to have helped cause the present over-supply of alcohol.

### **FUELS**

As oil supplies began to build up, owing in great part to the extremely mild weather in the east which cut down on fuel consumption, and the storms in the west that cut the use of gasoline, efforts were being made to reduce production to keep it in line with demand. For the third straight month, The State Railroad Commission of Texas ordered a drastic decrease in crude oil production, this time by 200,083 barrels daily. A fourth round of cuts in heavy fuel oil prices along the eastern and gulf seaboards took place during the month, bringing a total decline since November of over 90 cents a barrel. Meanwhile, Alf M. Landon wrote President Truman that the American oil industry was threatened with a recession unless crude oil imports were reduced. Under the impact of imports, he said, prices of some refined products have dropped and the price of domestic crude oil is now softening. "Lower crude oil prices would touch off a recession in the American oil industry," he added, "for the present price barely represents the replacement cost of oil produced under the present costs of labor, steel and other essential materials."

### AGRICULTURAL COMMODITIES

Lack of definite information for traders on future crops, government policies, and business prospects generally caused grain prices to continue fluctuating nervously at mid-month following the sudden dip that occured early in the month. Prospects of a record harvest this summer and fall were being balanced with speculation over whether recent heavy rains and snow over the winter wheat belt would ruin part of the crop. During the week ended February 20, the Government stepped up its buying of cash wheat to about 7,000,-000 bushels, but at the close of the week wheat was selling about 15 cents a bushel below the Government loan level on the 1948 crop. Important factors working against a precipitous decline in the grain market, in addition to government support to maintain prices at 90% of parity, are the expected high per capita domestic food consumption in 1949, and the statement by Secretary of Agriculture Brannan that exports of food under the Marshall Plan for the next three years will be heavy.

### MISCELLANEOUS

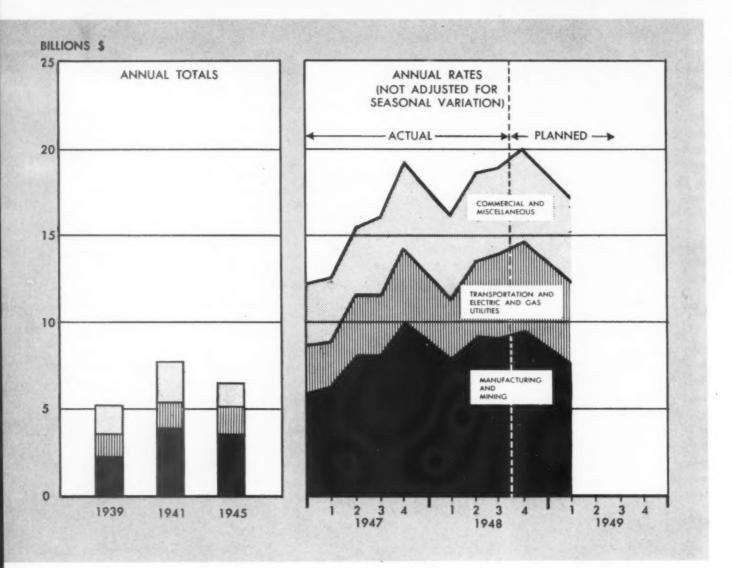
Export quota controls on fats and oils, including butter, have been lifted by the United States Department of Commerce, following the ending of international rationing of these products by the International Emergency Food Committee of the Food and Agriculture Organization . . . Despite an acute shortage of wool



due to declining production and abnormal demand, with consequent booming prices, producers were warned by the executive director of the American Wool Council that wool is becoming more susceptible to competition and replacement by synthetic substitute fibers than ever before.

In Australia, a deputy high commissioner to the United Kingdom forecast that fluctuations and high prices will end in big falls . . . Textile Economics Bureau, Inc. revealed that the rayon producing industry in the United States broke all previous production records in 1948 with an output of 1,124,300,000 pounds of filament yarn and staple. This exceeded the 1947 figure by 15% and was nearly three times as high as the 1939 level . . . Production of primary magnesium ingot rose in 1948 to 20,000,000 pounds, an increase of 12% over 1947, according to the Magnesium Association. Total usage of magnesium metal, including secondary magnesium, was about 30,000,000 pounds.

### EXPENDITURES FOR NEW PLANT AND EQUIPMENT



[Millions of dollars, annual rates, not adjusted for seasonal]

Period		Manufac- turing	Mining	Transportation		Electric and	Commercial
	Total '			Railroad	Other	gas utilities	laneous 2
1939	5,200	1,930	380	280	280	480	1,850
1941		3,400	680	560	340	710	2,490
1945		3,210	440	550	320	630	1,480
1946		5,910	560	570	660	1,040	3,300
1947		7,460	690	910	800	1,900	4,430
948 1		8,180	770	1,310	690	2,610	5,280
947: First quarter	12,640	5,800	600	640	720	1,320	3,600
Second quarter		7,400	640	880	920	1,800	4,120
Third quarter		7,480	720	920	800	2,000	4,640
Fourth quarter		9,160	840	1,200	760	2,480	5,360
1948: First quarter	16,680	7,200	720	1,080	720	2,000	4,960
Second quarter		8,560	800	1,240	760	2,560	5,360
Third quarter		8,360	800	1,320	680	2,760	5,440
Fourth quarter 4		8,640	720	1,600	640	3,120	5,320
1949: First quarter 4	17,560	7,120	720	1,480	600	2,720	4,880

Excludes agriculture.

Includes trade, service, finance, and communication.

Based on actual expenditures for first three quarters and estimates for the fourth quarter.

Estimates based on anticipated capital expenditures of business.

Note.—These figures do not agree with the totals included in the gross national product estimates of the Department of Commerce, principally because the latter cover agricultural investment and also certain equipment and construction outlays charged to current expense. Figures for 1939-44 are Federal Reserve Board estimates based on Securities and Exchange Commission and other data.

Detail will not necessarily add to totals because annual rates are based on quarterly figures rounded to the nearest 10,000,000.

Sources: Securities and Exchange Commission and Department of Commerce





Frank Ashmore President, P.O.A., 1948-49

Thomas F. Turner
Executive Vice President, P.O.A.

Mr. Ashmore is Chief Purchasing Officer and a Director of Subsidiary Companies of The Calico Printers' Association, Ltd. Mr. Turner is Chief Purchasing Agent of The English Electric Co., Ltd.

### Great Britain's Purchasing Executives Have Active Association Program

N 1931, Leonard H. Swinbank, then Controller of Purchases of Imperial Chemical Industries, Ltd., returned from a visit to the U. S. A. where he had seen the work being done by the National Association of Purchasing Agents. At that time no comparable organization existed in Great Britain, and at a subsequent conference attended by the purchasing agents of a number of the leading British industrial firms, Mr. Swinbank pointed out to them how much was to be gained by joining together in a common association. As a result, they formed themselves into the British Industrial Purchasing Officers Association, with a membership confined to those holding responsible positions in the purchasing departments of industrial firms and public undertakings, who were not also engaged in sales activities.

Of those first pioneers only three are still active in the Association's Purchasing Officers Association was inspired by the example of N.A.P.A.

Membership and influence have grown rapidly in the past three years.

Educational program is coordinated with the Government plan of education for management.

By John R. Blinch
General Secretary
Purchasing Officers Association

affairs and continue to serve on our Council. They are: Charles Kelsey of The London Electric Wire Co. & Smiths, Ltd., Leonard Dunkerley of Rowntree & Co. Ltd., the chocolate manufacturers, and William Gildon of the B.E.T. Federation, Ltd., Britain's largest omnibus combine.

Some years after formation, as the scope of the Association's work covered purchasing for government and public undertakings as well as for industry, it was decided that the words "British Industrial" should be omitted from our title. Today, although members are drawn main-



William Napper
Chairman of National Council, P.O.A.
Mr. Napper is Chief Buyer, South Suburban
Gas Company



Dennis Wragg
Vice Chairman, National Council, P.O.A.
Mr. Wragg is Chief Buyer and Local Director,
Thos. Firth & John Brown, Ltd.



Horace King Hon. Treasurer, P.O.A. Mr King is Chief Purchasing Officer, Eburite Corrugated Containers, Ltd.



John Blinch, A.C.I.S.

General Secretary
Purchasing Officers Association

ly from industry, a substantial and increasing number of them operate in the field of public purchasing.

The objects of the Association remain the same to-day as they were when it was first formed. Stripped of legal jargon, they may be summarized as follows:

(a) to secure a proper recognition of the importance of efficient purchasing, with a consequent improvement in the professional status of purchasing men.

(b) to improve the technical and general knowledge of purchasing agents and their staffs.

(c) to encourage an interchange of ideas and to promote a spirit of mutual help amongst members.

(d) to promote a high standard of integrity and honesty in the conduct of business generally, and in all purchasing matters in particular.

The steps which the Association is taking to implement these principal objects are described later.

### Growth

The Association was incorporated in 1935 and made steady progress until the outbreak of war, but its development was hampered by the fact that it shared its administrative machinery and secretarial services with a number of other management associations. During the war it was inevitable that there should be a falling off in the amount of time and energy which members could spare to interests not directly concerned with their daily fight to secure supplies, and this also acted as a brake upon the Association's growth.

In 1944, however, the Council of the Association decided to become completely independent of the other bodies with which it had hitherto been associated, and to set up its own Headquarters organization. From that time, growth has been rapid. At the beginning of 1946, membership numbered 700 and there were six local Branches. To-day, membership numbers over 1,750 and 22 Branches or Groups have been established in the principal industrial areas of England, Scotland and Wales.

In Great Britain there is not the problem of vast distances which you have in America, and therefore, although each of our Branches is governed by its own committee, democratically elected by the members, the authority of these committees does not extend beyond the organization of Branch activities. Each Branch sends two representatives to the National Council of the Association, which governs policy and all other matters of more than local im-

### PURCHASING OFFICERS ASSOCIATION

Headquarters Office

17/18, Henrietta Street, London, W.C.2

	17/10, Helitiella Silvel, London, W.C.2
BRANCH	USUAL MEETING CENTRE
Bedfordshire & Hertfordshire	Luton
Birmingham	Birmingham
East London	Ilford, Essex
	Loughborough, Leics.
	Edinburgh
Glasgow	Glasgow
	Gloucester
Hull	Hull
	Liverpool
	London (W.C.2 district)
	Manchester
	Peterborough
Sheffield	Sheffield
Slough	Slough
South of England	Southampton
	Cordiff
	Stafford
	Middlesbrough
	Newcastle-upon-Tyne
	Bristol
	Wolverhampton
	Leeds

portance. Members pay their subscriptions direct to the London headquarters of the Association, which provides grants to Branches to meet the expenses of their functions.

It is at Branch level that the real spadework is done in fulfilling the educational objects of the Association. Each Branch holds a meeting at least once a month, which are on very similar lines to those held by vour N.A.P.A. locals. Branch Committees vary their programs as much as possible by including papers on industrial and management subjects, films, discussions, debates, and visits to works. Also, by giving the social angle more prominence, we are overcoming to a very large extent the somewhat insular views which years ago were characteristic of the British purchasing officer. Just recently our Sheffield Branch organ-ized what it called a "Gadgets Night", at which about 100 manufacturers sent along one of their products to be exhibited. No salesmen accompanied the exhibits, which were left to sell themselves, a brief description of each article being given by the Association member who organized the function. This innovation was extremely popular, and is likely to be repeated in other Branches. A popular feature of most Branch meetings is a mutual aid session, which takes place after the normal business of the meeting has been concluded, and during which members are invited to seek advice from others on their purchasing problems. Without disclosing confidential information, members are always very willing to pool their knowledge, and it is seldom that a request for assistance remains unsatisfied.

There is no doubt that through the Association many buyers have gained valuable experience in public speaking. Until the beginning of the recent war, buying was very much a listening profession, but since then buyers have found it a very severe handicap to be inarticulate. By participating in Branch discussions and debates, many of our members have gained that confidence in self-expression which is nowadays such an essential feature of an efficient purchasing agent's make-up. This ability to present the buyer's point of view is important not only in daily contacts with salesmen, but also in keeping the other functions of management aware of the importance of purchasing.

### Council Organization

On a national level, the work of the Association's Council is conducted through the following Committees:—

General Purposes & Finance Development Education Publications Conference and National Functions Economic Survey

The titles of these Committees will explain their functions, and all are equally essential parts of the Association's organization. The Economic Survey Committee has only recently been set up and we hope that in time it will work in a very similar manner to your N.A.

P.A. Business Survey Committee, by providing members with up-todate information from authoritative sources on economic trends and similar matters.

During the past two or three years, much time and thought have been given to the development of the educational work of the Association in training the buyers of the future. We realize that this is a most important field of activity, upon which the future success and national influence of the Association will very largely

depend.

Just before the war, plans were in hand for launching an Education Scheme in purchasing subjects, but these were stillborn when hostilities commenced. Since the end of the war, however, there has been a growing realization in Great Britain of the need for proper training in management subjects, and many management Associations have been concentrating on this aspect of their work. In 1946, a Government Committee was set up to examine the whole question of education for management, and its report was published a year later. This report advocated that to avoid duplication of effort, and to give Technical Colleges a reasonable chance of meeting the demands of a number of management associations, all these associations should agree to accept a common Intermediate Examination dealing with the basic principles of management and similar fundamental business subjects. Having passed this Intermediate Examination, students would then study the specialized Final Course prescribed by each functional association.

### Three Founder Members of P.O.A. are still active in its affairs. All three are Past Presidents of the Association.



Charles Kelsey
Chief Purchasing Officer
London Electric Wire Co. & Smiths, Ltd.



Leonard Dunkerley Purchasing Manager Rowntree & Co., Ltd.



William Gildon Chief Purchasing Officer The B.E.T. Federation, Ltd.



Cheltenham Conference of the Purchasing Officers Association, 1948.

The Purchasing Officers Association has accepted the recommendations of this report, in common with the other management associations, and has drawn up a complete Education Scheme, covering both Intermediate and Final stages. Under this Scheme, we have decided upon the following six special subjects for our Final Examination in purchasing and allied functions:—

Purchasing—Principles.
 Purchasing—Practice.

3. Raw Materials (Economic and Geographical Survey).

4. Storage and Control of Stock.5. Legal Aspects of Purchasing.

6. Transport Aspects of Purchas-

In framing the detailed syllabuses of these subjects, we have decided to concentrate on providing information of a general nature which is needed by all buyers, whatever the field of purchasing in which they may be engaged. We feel that at present we should not attempt to teach the technicalities of materials applicable to individual industries.

The Scheme is still very much in its infancy, and a great deal remains to be done before success can be claimed. However, we are confident that in paying particular attention to this important subject of education, we are building on solid foundations for the future. If, as we claim, the status of the purchasing officer is on the same level as that of other functional executives, then he must be equipped with sufficient knowledge, not only of purchasing, but also of the broad principles of business organization, to enable him to talk on equal terms to his colleagues round the management conference table. Through our Education Scheme, we are trying to make sure that the

young buyer has the means of gaining this knowledge.

The success of the Education Scheme is of course very much dependent upon what literature the Association is able to publish to supplement the spoken word. again, although considerably hampered by paper restrictions, the Association can claim to have made rapid strides in the past few years. Since 1944, we have published our own journal, and from January, 1949, this has become a monthly publication, instead of bi-monthly as hitherto. Compared with your own "Purchasing" magazine, our journal is on a very modest scale. However, we look forward to the time when there will be sufficient paper in the world for everybody without restriction, and we shall be able to provide for British buyers a magazine comparable to those available in

For education purposes we really need a British purchasing expert of the calibre of your Howard T. Lewis, or Stuart F. Heinritz, whose works are well known but not readily obtainable over here, to write a British "Buver's Bible". Although this is our long term ambition, we are taking immediate steps to try to cope with the problem by publishing a series of handbooks dealing with various aspects of a purchasing officer's duties, which will be of use both to the established buyer, and also to the student. The first of these handbooks deals with "Stock Control", and was prepared by our Past-President W. Gildon. It has been well received, and further titles dealing with a variety of subjects are now in course of preparation.

A service provided by the Head Office of the Association, which is of growing importance, is the Appointments Register, enabling us to introduce members desiring a change of appointment to employers in need of purchasing staffs. By means of this Register we have been able to assist many members in obtaining improved positions, and employers with vacancies to fill are consulting the Association in increasing numbers. For reasons which will be readily understood, we do not recommend any particular member for a certain appointment. Although details of vacancies are sent only to those members who are likely to have the desired qualifications, we prefer an employer to have a completely free choice between the members who make use of the information regarding vacancies, which we pass on to them.

During recent years we have organized a series of national functions in the form of luncheon meetings and Annual Conferences, two of the former being held in Birmingham and London during the British Industries Fair, in the first fortnight of May of each year. These national occasions serve a double purpose in enabling members from different Branch areas to meet each other and widen their friendships within the Association and also in providing a medium for securing national publicity for the work of the Association. Our recent annual Conferences, although not yet approaching the scale of the Waldorf-Astoria functions we read about in this magazine, have attracted increasing attendance of members and their ladies and have proved to be most enjoyable and instructive occasions.

Despite the broadening scope of the Association's work, we still regard as our principal object that of keeping before industry generally, and top management in particular, the need for recognizing the importance of purchasing and for granting the purchasing officer a status at least equal to that of the other functional executives. Although in this country, the purchasing officer's status has steadily improved, particularly during and since the war. there is still evidence that a proper appreciation of buying is sometimes lacking. The reasons for this state of affairs, and the efforts being made to correct it, could well form the subject of a separate article, but the increasing number of instances of members of the Association being appointed Directors of their companies, comparable to Vice-Presidents in U. S. concerns, is evidence that the purchasing officer is fighting a winning battle.

In this connection, it may be of interest to mention that with the financial aid of the British Government, a national organization was founded about a year ago to represent and assist the interests of management generally. This British Institute of Management is consulting the Purchasing Officers Association on all matters concerned with supply, and is providing a very convenient means of keeping the importance of the purchasing function well before the eyes of those concerned with all levels of manage-

It is also a healthy sign that the British Standards Institution is making increasing use of the P.O.A. in asking for comments from the consumer's point of view on its draft Standards before they are published.

It is hoped that this article will have given you the impression that our Association, although young, is a very virile organization with a bright future. Broadly speaking, our objects and activities are similar to those of the N.A.P.A. The big difference between the two seems to be that purchasing agents in America woke up to the need for forming their association a very long time before their opposite numbers on the other side of the Atlantic did so, and the strength of the N.A.P.A. is correspondingly greater.

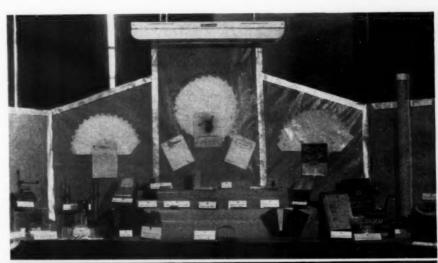
We still have some way to go before we can claim to be thoroughly representative of the purchasing profession in Great Britain. It is perhaps due to their natural, and in certain circumstances very desirable, characteristics of caution that we still need to convince some of the top men in the profession that they

are missing a great deal by not joining in our work. Fortunately, many others of equal status share our founders' conviction that, although their membership may bring them personally very little material gain, there is much satisfaction to be derived from helping to advance the interests of one's profession, so that those who follow may reap the benefit. It is to these members that the credit is due for such progress as we have so far made.

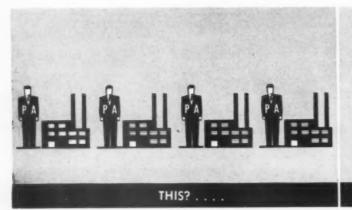
Finally, we should like you to know how much we appreciate the friendly interest which N.A.P.A. officers and members have shown in us, and the help and advice they have given us from time to time. Some of our members have had the privilege of attending meetings in the U. S. A. We have very happy

recollections of our close association with some of your N.A.P.A. members during the war, when Briga-dier-General Wayne R. Allen, G.S.C., General Purchasing Agent, United States Army, European Theatre of Operations, and members of his staff, were the guests of our London, Birmingham and Manchester Branches on a number of occasions. These pleasant contacts illustrated that American and British purchasing men have much in common and our members greatly enjoyed hearing the views expressed by those similarly engaged in the U. S. A. We can assure you that any other N.A.P.A. members who come to Britain will be warmly welcomed as guests at any of the national or branch functions which are held while they are over here.

"Gadget Night" is the P.O.A. equivalent of the products exhibits in N.A.P.A. chapters. The photographs show a typical "stand" or booth, and the Sheffield Branch Chairman trying out an electric typewriter.









By J. E. Bedford

Assistant Professor of Merchandising Armstrong College, Berkeley, California

# Coordination of Decentralized Purchasing

Four plans of organization to handle the purchasing for a multi-plant company.

Coordination may be a better answer than centralized control.

Independent responsibility builds men of executive calibre.

OR years the question of centralization or decentralization of the purchasing function has been tossed around. Industries with several plants have tried out both plans with varying success. Their experience, good or bad, has been an individual matter and dependent on the organization, policies, and personnel of

Usually the plan adopted was one of the following three types:

1. Complete decentralization. where each plant placed purchase orders for all of their requirements with no control from executive headquarters.

2. Complete centralization, where all purchases are made through the central office in headquarters on the basis of branch requisitions and in-

ventory control of stores.

3. Decentralized purchasing with centralised control, where each plant has its own purchasing department that is under the direct control of

the General Purchasing Agent located in the executive headquarters

Under the third plan, which embodies most of the advantages of both centralization and decentralization, the General Purchasing Agent establishes policies, approves vendors, forecasts price trends, places contracts, establishes procedure, and in general has the full authority and responsibility for company purchases

With this system of purchasing, the General Purchasing Agent must be a man of no mean ability. American Industry has produced many of these men, but some organizational structures are so rigid that he does not have the authority to operate his department at its highest efficiency.

For example, the General Purchasing Agent may have an outstanding man in one plant who can handle more responsibility, thus making the work at headquarters

lighter and doing a better job on purchases. Because the policy and procedure aren't flexible enough under this organization system it is impossible for the General Purchasing Agent to delegate this work to the qualified man in the field.

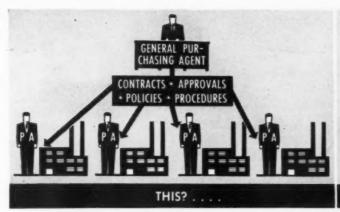
Local purchasing agents under the plan of decentralized purchasing with centralized control are charged with the responsibility of their individual plant purchases. They know their plant's requirements, develop local sources, place orders with approved vendors against contracts, and follow the procedures and policies established by the General Purchasing Agent.

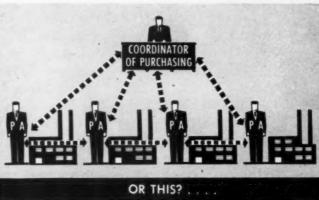
In such a position the local purchasing agent may be receiving valuable training as a future General Purchasing Agent, but he may decide that his horizons are limited. He will do his job in the plant and follow orders carefully. But, he may not develop any initiative or creative ability so essential in purchasing today.

Since there are obvious disadvantages to either the complete centralization or complete decentralization plans they are not widely used. Plan three, decentralization of purchasing with centralized control, also has a few disadvantages that limits its

general acceptance.

Policy and procedure are established by an executive in the office at headquarters away from individ-





ual plant problems. Approval of vendors on a company-wide basis has much to recommend it, but it too can be a disadvantage. When the General Purchasing Agent makes a forecast of price trends he is in a better position than purchasing agents in small plants, but he may not be aware of all local conditions and if he is wrong all plants in the company will suffer.

To overcome these disadvantages and still retain the advantages of all three forms of purchasing department organization, a fourth plan has been suggested. It is being used today by some companies with very

satisfactory results.

4. Decentralized purchasing with centralized coordination, where the individual plant purchasing agents have the authority and responsibility for the efficient operation of their departments. These men have certain broad policies and procedures to follow to make coordination possible, but the purchasing function as such is in their hands.

This plant purchasing agent works with the general plant manager, the plant production manager, the plant sales manager, and the plant controller. He operates his own purchasing department to the best of his ability and its success or failure is his direct responsibility, just as profitable operation of the division is the responsibility of the general

plant manager.

In the executive offices at headquarters is the Central Coordinator of Purchases. This man, a major executive in the company, acts in an advisory rather than a supervisory capacity. Except for the formulation of general policies and procedures, he has no direct control over the plant purchasing agents.

Through his office pass various reports made by the plant purchasing agents. From these reports he will work with plants to coordinate their activities for the general welfare of the company.

Any recommendations the Central Coordinator of Purchases may have are made in the form of suggestions to the plant purchasing agents for their more efficient operation. These plant purchasing agents are free to accept or reject these executive office recommendations as they see fit.

Perhaps the biggest advantage of this plan is the coordinated effect it has on the company as a whole. Each plant purchasing agent is working individually, yet he has the opportunity to share his own experiences and problems with others through the Central Coordinator of Purchases.

One plant purchasing agent may be having difficulty in locating a reliable supplier for some new part needed in a change over. Another plant purchasing agent may have been successful in solving this problem at his plant. His experience passed along to others in the organization through the Central Coordinator of Purchases will prove help-

When price trends come up for consideration, the opinion of ten, twenty, or thirty plant purchasing agents dealing with the problem and charged with the responsibility daily is valuable. Their opinions on the future can be accumulated by the Central Coordinator of Purchases and distributed along with the information he has been able to accumulate from outside sources.

Individual decisions are made, but they are made in light of what others think who are confronted with similar problems. The advantage from this point will help concerns dealing in widely-fluctuating commodities more than others, but it has definite benefits for most organizations.

Another advantage that is gained with this plan of decentralized purchasing with centralized coordination is in the matter of price. Complete centralization and decentralized purchasing with centralized control assure all plants in the organization the same price on the materials, parts, and supplies that they purchase

All plants have the same price, but do they have the best price?

Efficient purchasing departments endeavor to obtain the best price on everything they buy. In most cases they do, but occasionally they will fail to contact some source that may give them a better price on the same

As a case in point, one firm with twenty-four plants operating under a plan of decentralized purchasing was buying a certain type of file for work in their plants. Each plant was making individual purchases for

their needs.

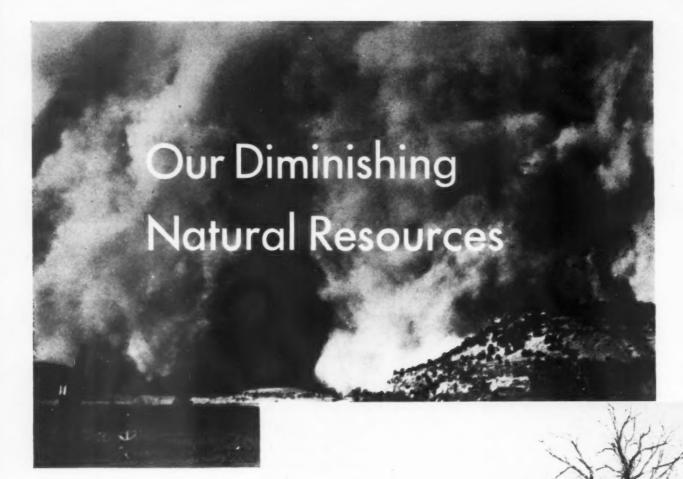
In a study to determine if a change in the organization would be advisable, an analysis was made of the purchases by items. Some revealing facts were discovered: canned goods used in company cafeterias varied as much as 140%. Paper towels showed a variance of 100%.

These variances would probably have been eliminated with a centralized control of purchases. Even if centralized control couldn't have obtained the best price in all cases it would have eliminated the wide variances.

But, one item pointed out how valuable coordination of purchases could be. One plant was paying 20¢ for a file and others were paying 40¢ for the same brand, size, and quality. Further investigation gave the answer to this price vari-

The plant purchasing agent who was getting the best price had discovered the file on sale in his local hardware store at the lower price.

(Please turn to page 348)



Not a conflagration—but a Colorado dust storm of 1935, result of deforestation and wind erosion.

Complete desolation follows in the wake of the dust storm.

The Soil Conservation Service, U. S. Department of Agriculture, anchors drifting dunes with fences and a temporary planting of Holland grass; permanent and productive planting will follow.

### By Grey Leslie

Thoughtless exploitation is wasting our store of irreplaceable natural wealth.

Man and Nature, working together, can retain the fertility of live-giving soil.

Conservation and reclamation must go hand in hand as a national policy. F we regard the Earth as an apple, with the creatures thereon as various insects and fungi living harmlessly on the skin of that apple, we must consider Man in his recent stage of development as something like a maggot which is boring perilously into the apple and preparing his own as well as its destruction.

There is little comfort in the thought that he may acquire wings or some ingenious device to enable him to fly to another apple. If he does so it will be much the worse for that other apple.

When we consider the prodigious efforts of Nature over many millions of years to build this fair Earth of ours, it surely does not seem prudent to destroy the accumulated results of those efforts in a few generations. Take a basic material like petroleum and its derivative, gasoline. This liquid is the oil of creatures which lived in the sea over vast and ancient periods. It is limited in quantity, and can only be used once. These creatures certainly left something behind them. They took a major part in building up the

Earth. Yet at our present rate we are consuming this treasure like a candle-flame in a short period of

conscienceless orgy.

The bones of countless creatures form the deposits of rock phosphate, the most valuable of fertilizing agents. They too are limited in quantity, and under present methods, will be consumed before long; and they are irreplaceable. Under a sensible system of return, these rock deposits would be used only for building fertility on ruined land, reclaimed 'and, or essentially poor land. But we are exhausting the supply by using them indiscriminately for average agriculture.

What has Man added to the Earth's basic natural wealth? Actually his relatively brief habitation is better known for the ruins he has left than for his creations in this respect, and the very ruins themselves were mined from the Earth.

fully built by creatures both huge and tiny over myriad ages. At first wind, rain, sun, and ice beat and macerated a bare Earth. Slowly the creatures advanced from the shore, leaving the fertile sea of their birth for the bleak air of dry land. Lichen, moss, plant, and tree; insects, worms, and slugs; reptile and bird; tiger and deer—all fought their way up from the soft swamp and damp shore, till rock and hill were covered with forest and soil.

Earth's exquisite carpet was woven, and the World was ready for Man. Not until Man kept sheep and goats did he begin to injure the forest which had made the soil from which he lived. Not until he learned the magic of iron and the minerals in the earth and fashioned ingenious implements from them, could he, with his flocks around him, destroy that forest, leaving the hillside land so bare that floods swept down the

The Ten Plagues of Egypt story is a concise dramatization of the disasters in climate, crops, and health that inevitably follow the breaking of the basic laws of conservation. Similar sets of disasters have occurred repeatedly in all countries, including our own.

All of these facts reinforce the urgency of husbanding our natural resources and constantly replenishing the soil to increase its fertility. This should be the first consideration of the citizenry and the first

duty of statesmanship.

#### Exploitation of Forests Starts Soil Erosion

Forests and rivers were the parents of civilization, and the intimate connection between these two natural agencies has been described by many hands throughout the ages.

The civilizations of ancient Egypt, Mesopotamia and China flourished beside the fertile banks of great rivers. But the sources of those rivers were in each case among the forest-clad mountains. When those sources were not protected and nourished by a heavy canopy of forest, the river valleys suffered catastrophic floods, destroying the settlements along the banks and silting up the river mouths.

"Rule mountain, rule river; rule river, rule country" is an age-old

Oriental maxim.

The matrix of the ancient world, the Mediterranean basin, is now a pitifully desiccated and denuded region, no longer self-supporting in any useful crop. Even Plato in his "Critias" graphically described the sad processes of soil erosion in ancient Greece.

With the spread of industrialization throughout the world, the forests of the Earth have been continually shrinking. Wood has become a universal raw material out of which almost everything from fuel to newsprint, chemicals, and plastics

can be made.

The carpet wrought by the living creatures over unimaginable ages is threatened with destruction. Its living patterns are broken and eroded. In many parts of our own bountiful country not even the base threads remain on which the carpet was built. Fortunately for us, wide attention is now being directed to the fact that mankind can feed from nature and fertilize her fruits simultaneously.

Industrialists, farmers, public officials, and the average citizen are all being currently supplied with a literature on conservation and reclamation. That literature is ad-



Compare this achievement to that of the lowly living creatures who built our vast limestone ranges, our towering chalk hills and the immense coral reefs which traverse the globe.

As a hunter, man did relatively little harm. At times he might do such wasteful things as to drive herds of buffalo over a precipice, and take little from them but the luxury liver, a few skins, and a useful bone or two. But the great hide of the Earth, he was powerless to injure. That great hide with its infinite variety of texture was pain-

soil to bury his cities or lose itself in the sea. Not knowing the trees to be the source of soil, moisture, and life itself, he cleared them for his farming, for his mining and smelting, and for his housing; and as he impoverished the soil he moved to fresh pastures and other woods, all the time eating up the very source of his life. Even his early irrigation schemes ignored the need for trees around the sources of water, or were on too large a scale so that the land was poisoned with the salts left by evaporation.





These "before and after" views were taken in May and September, 1940, showing a good start toward reclamation of an abandond western farmstead, victim of wind erosion, with a cover crop of sudan cane and broomcorn.

dressed to all classes of readers. The subject has even been successfully novelized for popular understanding in Alice Tisdale Hobart's book entitled, "The Cleft Rock". It is a story of the great reclamation project of California's Central Valley. It predicts not only a fuller development of the resources of that great, fertile-but presently water-stinted -area, but also a clear recognition of the interests and rights of the many against the ambitions and selfishness of a powerful and exploiting few. The recent Central Valley drought gives the book a special timeliness and focuses attention on one of the most serious problems confronting our modern life every-

There are other quietly eloquent re-interpretations of this theme which is as old as history. The Bible records that Job lamented, "The waters wear the stones... Thou washest away the things that grow out of the soil of the earth and thou destroyest the hope of man."

In our own day, and within the past ten years especially, many earnest writers have uttered the same lamentation and warning. Stuart Chase's "Rich Land—Poor Land", Paul Sears' "Deserts on the March", G. V. Jacks and R. O. Whyte's "Rape of the Earth", William Vogt's "Road to Survival"—all develop the same central theme that Man, a creature of the earth, has made war from the first against the natural fertility of our living soil and water, and is now becoming aware of "failing powers".

One of the most forceful recent warnings is uttered by Dr. Fairfield Osborn in his book "Our Plundered Planet". Dr. Osborn is President of the New York Zoological Society and he has brought to his book the exact discipline of a scientist, combined with the talent of a clear and competent writer. When a man of his eminence warns of our impending catastrophe and the terrifying threat of world-wide starvation and collapsing civilization, we would do well to give it serious heed. He puts modern man in proper perspective as a mighty, selfish, geological force, wastefully mining the gold of fertility that the ages have accumulated. Man is now conscious of the waste and havoc of waging war against his fellows, but he appears oblivious to the waste and havoc of an even greater immediate and continuing struggle-his war against nature.

#### War Against Nature

"The story of our nation in the last century as regards the use of forests, grasslands, wildlife and water sources." the author writes, "is the most violent and most destructive written in the long history The velocity of of civilization. events is unparalleled, and we today are still so near to it that it is almost impossible to realize what has happened, or far more important, what is still happening. . . Are we to continue on the same dusty, perilous road once traveled to its dead end by other mighty and splendid nations?" asks the author of our more than 140 million Americans. "Or in our wisdom, are we going to choose the only route that does not lead to the disaster that has already befallen so many other peoples of the earth?

Dr. Osborn is not indulging in scare tactics. His is a carefully reasoned, scientific observation. In forthrightly facing the facts we shall find that we are in a situation that will shock even the most complacent citizen.

The monotonous repetition of the ancient ruinous formula of "cut, burn, plant, destroy, move on" has lost whatever validity it ever possessed. There is today no more room in which to move. In surveying the world, Dr. Osborn finds twin problems in ruined soil and ever expanding populations in all of Africa. Europe, Latin America, The United States, and Asia. In America more than 55% of the people live in cities and towns and seem to know little and care less about the source of their food supply. Until very recently, the knowledge of what conservation and reclamation really mean was extremely limited and was associated with plunder politics in the minds of those who thought at all about these matters.

Even today, in spite of a broadening public concern, some selfish and greedy interests are vigorously campaigning to open the few remaining public lands to vicious exploitation. The tidelands with their rich bounty of precious oil are in danger of falling into the hands of special interests more avid for quick profit than conservation, even for defense.

It is significant that the Soviet and the United States are the two great countries becoming most aware of the problems so clearly stated by Dr. Osborn. Russia can enforce conservation while the United States must address itself largely to the sense of public interest of private landowners.

Books that forthrightly expose the problem do far more than provide information. Dr. Osborn's book especially supplies the emotional sanction that will promote effective action. It is the serious responsibility of the entire population, particularly the uninformed urban dwellers through whose hands there flows most of the dwindling sustenance of the world.

About 175 thousand infants are born every day. The world population of two billion persons is double that of a century ago, and five times that of the seventeenth century. It is still rising at the rate of 1% a year, so that it will be doubled again in seventy years if the present rate is maintained. The stark prospect is that there will be too many people for an impoverished land to support. Even at the present time there is really no such thing as an abundance of food. If the relatively few countries which have more than they need gave their surplus to the rest of the world it would make very slight difference in feeding the famished hordes in India, China, Korea, and Japan, and the other sorely distressed peoples of the earth.

Dr. Osborn points out, "The tide of the earth's population is rising the reservoir of the earth's living resources is falling."

When we realize that unhurried nature requires 300 to 1000 years to build a single inch of topsoil, and what has taken thousands of years to build has been removed by erosion in a single day, we begin to comprehend the terrific price of our indifference or wanton neglect. When we consider that a carelessly left fire or a random match has destroyed 6000 years of forest growth, we can acquire a sense of responsibility, and the appalling cost of our carelessness.

It is possible to inculcate into men and groups of men a lively sense of responsibility towards their generous provider and willing nurse—Nature. We require fundamental scientific knowledge and new techniques. But the knowledge and the techniques are not enough. We cannot expect individual farmers to personally underwrite a thoroughgoing rehabilitation of their lands when the essential water and its power derivatives belong, as they should, to all the citizens of the nation.

"Our Plundered Planet" will acquaint the average American with the vital necessity for a far-flung program of conservation and reclamation so that the warnings of the long departed Maya will be noted and acted on:

"Today the jungle stands again in silent watch; the cities and their people are no more."



Soil drifts, up to six feet in depth, forced abandonment of these good South Dakota farm buildings in 1935. By 1937, sudan grass planting stopped the drifting and paved the way for reoccupation.



Overgrazing turned this once-fertile Oregon grassland into a premature Sahara. Seven years of reclamation work with European beachgrass and sod-forming legumes have reversed the process.

### Back Door Selling

• By Harry G. Specht

Vice President Eastwood-Nealley Corp. Belleville, N. J.

N trying to discuss so controversial a subject as "back door selling", we should think in terms of the fundamentals of business and from these fundamentals try to find an answer to our problem. Is back door selling an evil? Should it be eliminated? If not, should it be controlled?

Let us suggest a few fundamen-

1. We are fundamentally in business to sell and to serve a need.

2. If we serve well, we secure sales; and if our sales prices are higher than our costs, we secure a profit.

Every organization that sells also buys, so there should be some reconciliation between the sales policies and buying policies of a company. Many companies have sales policies but few have buying policies.

In general, we try to sell as high as the traffic will bear. This so called "traffic level" price is established by the company in a sellers' market and by the customer in a buyers' market. Competition sets sales prices on most commodities in any market. Where a company has a monopoly, its prices will invite competition if too high. So again competition establishes prices.

From our experience of the past we have gained certain fundamental beliefs. We believe these principles will operate again in the future. The war years were bad years to gain experience of a fundamental nature.

When a purchasing agent refuses to see a salesman when he calls, he invites back door selling. Salesmen, through back door selling, often gain information which might not otherwise be disclosed.

Every company that buys also sells. Therefore, it seems logical

Purchasing policies have a great deal to do with back door selling.

Shop contacts should be controlled by the purchasing office.

Fair competition and fair purchasing make for profitable business.



Harry G. Specht

that we can well start with these thoughts:

We should treat salesmen calling upon us, the buyers, as we wish to have our salesmen treated as sellers.

The salesmen are entitled to a hearing when they call. This hearing may have to be by appointment, by phone, or direct contact. They should be entitled to tell their story to the proper party in the organization who can best judge their product.

If they cannot make a sale, they should be properly and honestly informed as to why this is so. Every salesman should be able to render an honest and intelligent report to the sales manager or home office.

If a salesman is a high pressure salesman, the purchasing agent who has to listen to him, might well counsel the salesman and advise him of his pressure selling. Remember the Josh Billings saying: "What you are talks so loud I can't hear what you're saying."

New salesmen should be encouraged and not discouraged in their sales experience. At best, selling is not an easy job in most lines.

If you have a buying policy, give it to a salesman in printed form so he can understand your policies. These can be brief, outlining times for calls, etc.

If a salesman calls too often, so advise him.

Abstract of an address before the Purchasing Agents Association of New York, January 18, 1949.

When companies have satisfactory sources of supply established over a period of years, salesmen should so be informed in the proper manner.

Don't ask for an inside discount, unless it is the policy of your sales organization to give such discounts.

Don't ask a salesman who calls on you to do an unethical act that you would not do yourself, or that your firm would not permit your salesmen to do.

Don't cater to favors and excessive entertainment from a few sales-

as you can", is of course worse than having no policy at all.

The purchasing agent as an executive should sit in on company policies. These policies all affect a purchasing agent in his job. Sales, manufacturing, cost, development, and sales engineering are all closely allied to the purchasing function. Too few purchasing agents are invited into such policy meetings. It is a big mistake, for a purchasing agent properly informed on company programs and policies can produce profits for a company in many ways.

policies properly related to sales and developments is one of its principal causes. Sometimes salesmen know of developments long before the purchasing agent does. This is especially true where purchasing offices are separated from plant and factory offices.

### Controls Are Needed

What the the evils of back door selling?

1. It destroys the functioning of an organization.

2. It opens the door to bribery and entertainment.

3. It loses the basis of fundamental buying.

4. It causes friction and misunderstanding in the organization.

5. It takes up the time of men on production to spend such time on purchasing.

6. Men not trained for purchasing may discuss and disclose confidential information.

7. It destroys purchasing initia-

8. It causes political problems within a group or department where one or more may place an order.

9. It divides responsibility when two or more people are buying parts that may have to co-ordinate, and it destroys control on expense items.

Back door selling as outlined is an evil when not controlled. If controlled through the purchasing agent it can result in many advantages to a company. In other words, if any person in an organization is to be visited by a salesman, such calls should be made and permitted through the purchasing agent. We might say, that if salesmen so call upon men in engineering and manufacturing, with the knowledge and permission of the purchasing agent, it is no longer back door selling. But we should recognize the advantages and control the evils of such a pro-

Written instructions given each time a salesman calls, as to his responsibility in making such shop calls will greatly facilitate matters. Such instructions might be as fol-

1. Call on the man you want to see, tell your story as quickly as possible and take up as little of his time as possible. He has a job to do.

2. Refrain from entertainment of shop personnel.

There may be other instructions added to make the story complete in accordance with particular situation involved.

The main reason for back door (Please turn to page 336)

### A WORD FROM THE P. A.

"One of the interesting points raised by Mr. Specht is the fact that too few companies have specific purchasing policies, outlined by management and reduced to writing. I believe the establishment of such written policies would be most helpful to all salesmen and to most purchasing agents.

"It is also pointed out that industry operates sales departments to sell at prices which will yield a profit, while purchasing departments are established to buy as economically as possible, other factors considered. While at first glance the two policies seem opposed, the establishment of sound buying and selling policies based on fundamentals promotes a reconciliation of the two, and we emerge from our transactions with the sense of satisfaction to all concerned.

"Back door selling has presented somewhat less of a problem during the war years and the postwar period of short supply, but as we move into a more competitive market, back door selling tactics will increase. In view of the foregoing, it would seem that now is the time to set up our policies with a view toward controlling all items of purchase."

William J. Gibson
Purchasing Agent
Eastwood-Nealley Corp.

These points are mentioned because a violation of any of them invites and brings about back door selling. If a salesman understands he is receiving fair treatment, there is little excuse for his back door selling. If he has received fair treatment and still resorts to back door selling, he should lose his standing and recognition.

#### Company Policies

Sales policies and purchasing policies should be outlined by management. When outlined, Management should back up a purchasing agent in his responsibilities, should have faith in him and trust him. A purchasing policy of "Buy as cheap

There must be a proper co-ordination between these branches of a company's business if a purchasing agent is to do an effective job. Too often a company has been working on a development, and the first time the purchasing agent hears of it is when the sales department has made a sale. Then it is too late to buy effectively, and consequently the production department determines the purchasing policy. Lack of planning on the part of the sales, development, and production departments, and their lack of understanding of purchasing problems and techniques, result in costly prices in purchasing.

What has this to do with back door selling? Lack of purchasing

### Reports to Management

WHAT type of reports is management interested in receiving from its purchasing department?

First, let us consider the reason we are delegated by the big boss to to the buying for the organization. The big boss of a few years back reserved for himself the privilege of bestowing favors in the form of orders for material requirements. Often the reason was that Cousin Joe or Lodge Brother Jim had an interest in the business of the prospective supplier. The first development of the centralized purchasing department was the designation of some one in the organization to relieve the big boss of some of the detail through such things as making up comparisons of bids, handling the interviews with some of the supplier representatives, and reports of such. The big boss still made the purchase decisions and awarded the orders. Purchasing was then a clerical function, and accounting knowledge and experience was considered to be the most desirable background in the selection of personnel for the job.

As it continued to be demonstrated that larger and more specialized business units could produce and market a considerable portion of the world's requirements more economically, the time of the boss was more and more taken up with other duties, and the purchasing department was charged with more of the responsibility of purchasing and scheduling. War controls increased the complexities of purchasing and scheduling goods, and also increased the other problems of the boss. Most of them were willing in these times to concede full responsibility to a purchasing organization competent to do the job.

Naturally, with increased responsibility and experience, the purchasing official has acquired more knowledge of how to do the job, and it is now generally recognized that it is in the company's best interest that purchase decisions—with due consideration of company policy and the recommendations of management and other departments—be kept in the purchasing department. Purchasing is no longer a clerical function, and the principal qualifications considered in the selection of purchasing personnel are sound judg-

The most useful reports to management are concise, specific, and not too frequent.

Keep management informed on the status of forward commitments and developments affecting policy.

Statistics help in department administration, but are of minor interest to top executives.

### By George H. Cole

Purchasing Agent Alabama Power Company Birmingham, Alabama

ment, knowledge of requirements and materials, and the ability to obtain and maintain cooperation both within the organization and in dealings with suppliers. Purchasing has become a management function.

Now, as it is obvious that the central purchasing department has come into the picture as a measure of relief from the heavy calls on the boss' time, it is natural that what he probably wants in the way of reports is that they be brief, concise, and not too frequent. At the same time, he wants the purchasing department to be alert in letting him know of developments that come to your attention-and may not come to him so early—that may materially affect the course, policies, and profit of the business. As to the volume of purchases and overall costs of materials in times past, he usually has this information in the form of Accounting Department records which show the cost of operation.

In our organization, we used to make a weekly report for the General Manager, showing orders issued, money spent, etc. This later was made a monthly report. Today, we report rather complete statistics of department operation just once a year, with occasional brief reports on specific items of interest. For our own use in administration of the department, we have continued the daily, weekly, and monthly reports, but they are not intended as management reports.

We, as is the case in many other companies, have placed orders further ahead than normally, and our management is interested in the extent and status of our purchase obli-

gations. This is reported monthly,

in as brief form as practical. The annual statistical report and the monthly report of status of purchase obligations are our only regular reports to management.

Equipment and material deliveries play an important part in planning and carrying out our programs, and we want to operate with as low inventory and as conservative total of advance orders as practicable. When prices turn down, we will be in better position as to prospective new commitments. From time to time, we furnish our management with lead-time reports showing current delivery information on the principal items purchased for our construction program. From time to time, as information is developed as to changes in delivery or cost status that are of particular interest, reports are made, usually in letter form. Our visits to factories to develop specific order information and basic information on the supply situation are also reported by letter. Items of particular interest appearing in the N.A.P.A. Bulletin and other publications are circulated, with portions marked for specific at-

Our management prefers this revised method of confining reports to pertinent information not usually received from other departments. It is in line with the specialized nature of our function, and with our responsibility of keeping abreast of changing conditions. It is logical in the concept and recognition of purchasing as a management function.

Abstract of an address at the quarterly meeting of the Purchasing Agents Association of Florida, Jacksonville, January 21, 1949.

# When the Innocent Must Suffer

By Leo T. Parker

Clear title to purchased goods is fixed by definite legal considerations.

A buyer may act in good faith and still incur financial loss.

Recent higher court decisions illustrate a variety of pertinent conditions.

ONSIDERABLE discussion has arisen from time to time over the legal question: When must an innocent purchaser of merchandise or equipment suffer financial loss? The answer is: The circumstances are numerous and varied. Hence the purpose of this article is a review of late and leading higher court decisions which illustrate variations of the law on this subject. Although the cases are very briefly explained any reader who desires to read any complete decision may readily identify the citation herein and read the decision in any good library. Readers will do well to file the hereinafter citations for future reference and valuable legal assistance in event of future unavoidable law suits.

# No Ownership

First, it is important to know that no one but the true owner may convey good and legal title to goods, merchandise or other chattels. This law is applicable although the owner innocently gave possession of his chattels to another without protection of a recorded lien, chattel mortgage or conditional contract of sale.

For illustration, in Guerin v. Kirst, 188 Pac. (2d) 509, it was shown that a seller named Guerin sold a man named Grove a used tractor. The sale was evidenced by a conditional sale agreement, written in longhand and signed by both parties. Guerin allowed Grove to take possession of the machine. Without permission or knowledge of Guerin, Grove sold it to a man named Kirst. Then Guerin sued Kirst to get possession of the machine.

Kirst contended that he should be allowed to keep the machine because he was an innocent buyer and did not know that Grove owed money on the equipment.

Nevertheless, the higher court ordered Kirst to give up possession of the vehicle to Guerin and said:

"Under such circumstances the conditional vendor is entitled to recover even though the subsequent purchaser had no knowledge of the reservation of title by the original vendor until payment in full. . . Grove was in the position of a mere possessor and could convey no title, however innocent his vendee."

Of course, if Grove had been guilty of fraudulently or carelessly inducing Kirst to believe that Guerin was the true and legal owner of the equipment it is very probable that the court would have decided that Grove could not take possession of the equipment from Kirst.

For comparison, see Martin v. Hollins, 118 Cal. App. 561. In this case a dealer sold four generator sets on a conditional sale agreement to one Hollins. Later the dealer consented to Hollins selling two of such sets specified in the conditional contract.

About six months later, without the knowledge of the dealer, Hollins sold to Waldorf Productions Company a third set for \$7,000.

In subsequent litigation the higher court held that the dealer could not get possession of this latter set because he had given Hollins permission to sell two of the encumbered sets whereby the last purchaser, Waldorf Production Company, had good reason to believe that none of the sets were encumbered. This court also explained that if an owner of equipment does any act which leads an innocent person to believe that one in possession of equipment is the real and legal owner, the innocent purchaser can keep the equipment.

# Stolen Merchandise

All higher courts agree that one who purchases stolen merchandise gets no good title. That is old law. Now a recent higher court has laid down new law that a purchaser may recover back the money he paid for

stolen merchandise, although the seller had no knowledge of the theft.

For example, in Lanham v. Felts, 209 S. W. (2d) 472, it was shown that one White stole equipment from its owner named Baldwin. Soon afterward, White turned the equipment over to his wife. She never inquired where her husband got it. Later the wife sold the equipment to one Felts. A few weeks later the police arrested White and the equipment was taken from Felts and delivered back to its true owner. Then Felts sued the wife to recover \$650 paid for the equipment. The wife testified that she had no knowledge that the equipment was stolen, and that Felts was negligent in not investigating to learn the identity of the true owner. Nevertheless the higher court ordered the wife to return \$650, with interest, to Felts, saying:

"The undisputed testimony is that appellee (Felts) had no intimation that it was stolen property, or that White had forged Baldwin's name to the bill of sale until after he had parted with his money."

# Not Theft

According to a recent higher court, one who purchases merchandise or equipment on credit and signs a conditional contract or mortgage, to secure payment of the balance due, cannot be guilty of theft although he takes the merchandise out of the state or sells it to an innocent purchaser.

For illustration, in Eline v. Commercial Credit Corporation, 209 S. W. (2d) 846, it was shown that one Ward purchased an automobile from a dealer in Evansville, Indiana. Ward made a down payment and for the balance of the purchase price executed a note for \$610.08, secured by the properly recorded conditional sales contract. As per the requirements of the Indiana law, the dealer

# HOW GOOD IS THE BUYER'S TITLE TO PURCHASED GOODS AND EQUIPMENT?

The purchaser's title to merchandise is no better than that of the person or firm from whom he buys it.

Real owner may forfeit his rights by any act giving a false impression regarding the title.

Money paid for stolen merchandise may be recovered even though no fraud is involved.

One who is entitled to possession under a conditional contract of sale cannot be held guilty of stealing that merchandise.

Seller may repossess goods from anyone on the grounds of original purchaser's default.

Breach of seller's guarantee, express or implied, does not affect ownership rights.

Component parts of equipment are within the terms of a bill of sale unless specifically exempted.

Title to separable parts and accessories may be separately reserved by the seller.

Verbal reservations to transfer of title are valid until purchaser complies with their conditions.

Neglect of seller to record a mortgage, or neglect of buyer to take note of a recorded mortgage may forfeit their rights of ownership.

All sales made in violation of state laws are void.

An innocent breach of contract may impose legal liability without proof of negligence or fraud.

delivered to Ward a certificate of title to the automobile properly endorsed showing the unpaid lien. The note was sold to the Commercial

Credit Corporation.

Without knowledge of the Commercial Credit Corporation, Ward removed the automobile to Kentucky, where he obtained a Kentucky license for the car. He filed with the Clerk of the County Court his Indiana certificate of title and made affidavit that he was owner of the car. The Clerk then issued to Ward a Kentucky license covering the automobile and issued to Ward, as required by Kentucky law, a license receipt in which it was recited that the automobile was last registered at Evansville, Indiana.

Then Ward sold and delivered the automobile to the Eline Motor Company. The lien debt not having been paid, the Commercial Credit Corporation sued the Eline Motor Company for conversion, and asked the court to order the latter to pay the balance due \$600 on the car.

The counsel for the motor company contended that the credit corporation could not receive a favorable verdict because Ward was guilty of legal theft and a state law provides that a suit involving theft of an automobile must be filed within one year from date of the theft, and this suit was filed more than one year thereafter.

The higher court refused to agree with this argument and in holding the motor company liable said:

"It will be readily noted that under the conditional sales contract the title remained in the vendor (seller) while possession was placed with the vendee (Ward). In no way can it be construed that one who has right to possession can steal the thing

that he possesses. It could be nothing more nor less than a conversion by Ward."

# May Possess Merchandise

If merchandise or machinery is sold under a conditional sales contract to a purchaser, and the seller retains title to the machinery until the purchase price is paid, the seller can obtain possession of it from anyone at the time or after the purchaser defaulted in making agreed payments although the seller breached an expressed or implied guarantee.

See Stanfield v. Crawley, 39 S. E. (2d) 88, where the purchaser of a machine signed both a conditional contract and a note for \$432, the balance due. The purchaser refused to make the agreed monthly payment on the grounds that the machine was "worthless". The seller sued for possession of the machine. In holding in favor of the seller, the higher court stated:

"Where property is conveyed by a conditional sales contract the vendor (seller), in case of default in the payments, may obtain possession of the property from one in possession of the same."

In other words, it is immaterial that a purchaser sells, gives or otherwise permits a third person to possess the merchandise. The seller can sue and take possession of the merchandise.

Of course, the purchaser retains his legal right to sue and recover damages from the seller who breached a valid expressed or implied guarantee.

# Must Examine Records

It is certain that one who fails to carefully examine all court records, recorded deeds, mortgages, contracts, and the like, stands a good chance for financial loss.

See Goodrich v. Brashear Company, 198 S. W. (2d) 357, where the testimony showed that a man named Wills purchased on credit a motor truck and four Goodrich tires and tubes. To guarantee to the seller the unpaid purchase price of the vehicle and the tires and tubes, Wills gave to the seller two chattel mortgages, one of which covered the vehicle and the other the tires and tubes. Both of these chattel mortgages were property recorded.

Later a corporation purchased the truck which had thereon the tires and tubes. Wills failed to pay for the tires and tubes, and the seller sued the corporation, new owner of the truck, to recover \$364, the value of the tires and tubes. The corpora-

the trend is

HIGH-TENSILE STEEL

for

FRAMES • BRACINGS • WHEELS • HUB CAPS
AND OTHER AUTOMOTIVE PARTS



High Strength • Finer Grain Structure • Good Formability • Great Impact-Toughness • Excellent Weldability
High Corrosion-Resistance • High Fatigue-Resistance

N-A-X HIGH-TENSILE MEETS ALL REQUIREMENTS OF S.A.E. 950



**GREAT LAKES STEEL CORPORATION** 

N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
Unit of National Steel Corporation

tion contended it was not liable, first, because it did not know that the tires and tubes were mortgaged; and second no negotiation was on the certificate of title to the truck that the tires were mortgaged.

Nevertheless the higher court held the corporation liable for payment of tires and tubes. This court said:

"Separate mortgages on chattels, such as those on the tires and tubes involved herein, need not be noted on the certificate of title of the motor vehicle in order to be notice to the world. . ."

Also, see Franklin Service Stations v. Sterling Motor Truck Company, 50 R. I. 336, 147 A. 754. Here an automobile dealer sold tires and many other accessories made under a conditional sale and mortgage. The tires and accessories were installed on a mortgaged truck.

In subsequent litigation the court held that the accessories did *not* become a part of the truck and the purchaser must pay separately for the accessories. In other words, *both* separate mortgages were held valid, one on the vehicle and the other on the accessories. The court said:

"These tires were not an integral and permanent part of the truck; they were temporary and separable attachments on the moving parts of the truck; they could be removed without injury to the truck and used elsewhere. . ."

# Removal from State

Considerable discussion has arisen from time to time over the legal question: If an innocent purchaser purchases merchandise or equipment not knowing that it was mortgaged in another state, can the holder of the mortgage take possession from the new purchaser? The answer is "Yes."

In the leading higher court case of Motor Exchange v. Commercial Inv. Company, 3 P. (2d) 178, it was held that a chattel mortgage executed and recorded in one state is good in all states. This court held that where the merchandise is removed to another state, such mortgage is constructive notice to subsequent purchasers of the merchandise in the last state, that the merchandise is encumbered. Hence one who purchases the merchandise in any state does so with constructive notice of the mortgage which entitled the mortgagee to sue the new purchaser and recover possession of the goods. And, also, see New v. Malone, 189 Pac. (2d) 177.

For comparison, see Hinds v. Atlas Accept. Corp., 80 P. (2d) 630. Here an automobile was sold

under a conditional sales contract signed in the State of Utah, where it was recorded. The automobile was brought by the buyer into the State of Oklahoma.

The higher court held that the holder of the conditional contract in Utah could take possession of the automobile from the new purchaser in Oklahoma.

Of course, if a seller fails to promptly record a conditional contract of sale or chattel mortgage, that neglect may cost him the amount due on the merchandise. This is so because all courts agree that if a purchaser removed merchandise from a state before the seller records the conditional contract of sale, or chattel mortgage, the new purchaser takes good title.

Therefore, a seller who neglects to record his chattel mortgage or conditional sales contract until after the purchaser has removed the subject of the sale from the state forfeits his legal rights as to innocent purchasers in another state.

Another important point of law is: All sales made in violation of a state law are void,

In Kinney v. Corn, 188 S. W. (2d) 144, it was shown that a purchaser knew that the seller had *not* made application for a certificate of title in his own name, as required by a state statute.

In subsequent litigation the higher court held the sale void. This court said:

"It appears to be a settled rule that a purchaser of property from one who has acquired possession thereof by theft, acquires no title thereto."

Also, one who loans money secured by a mortgage or conditional sales contract which violates a state law is an innocent loser.

For example, in Nichols v. Bogda Motors, Inc., 77 N. E. (2d) 905, the testimony showed facts, as follows: A bank loaned \$1,036.68 on equipment and took a chattel mortgage which was duly filed for record in the proper office of the county in which the equipment was located. Two months later the borrower sold it to one Bogda for \$1,235.

An important point is that the bank had failed to follow the state law and include on the certificate of title a notation that the equipment was mortgaged to it. The court held that the bank could not get possession of the equipment from Bogda. The court said:

"The bank did not take the simple and inexpensive steps open to it under the law for its own protection and the protection of others. Had it done so, neither party would have lost."

On the other hand, if a seller fully complies with state laws he acquires a lien to secure payment, although the contract or mortgage is ambigu-

# **Ambiguous Contract**

For example, in Ferg Drilling Company, v. Harris, 174 Pac. (2d) 262, it was shown that a seller sold the Ferg Company certain equipment on credit. The bill of sale covered items of the equipment but the mortgage given the seller to secure the purchase price listed only a few items, not including a pump.

The purchaser failed to pay the agreed price and the seller sued to foreclose the mortgage and possess all the equipment.

The higher court held that the seller could possess all items, saying:

ing:

"The pump was a part of the equipment described and, being so, would be within the terms of the bill of sale unless expressly excepted therefrom."

# Title Reserved

According to a recent higher court a seller may *verbally* reserve legal ownership in merchandise until the purchaser does some specified act, as make full payment.

For example, in Pugh v. Camp, 210 S. W. (2d) 120, it was shown that a seller permitted a purchaser to take possession of equipment with the verbal understanding that the purchaser would pay the contract price the following day. The purchaser sold the equipment that night. The higher court held that the first seller could possess the equipment from the last purchaser. This court said:

"If appellant (Pugh) (first seller) did reserve the title, its sale by Haynes passed no title, since he had none to pass."

For comparison, see Sykes v. Carmack, 211 Ark. 828. Here a licensed automobile dealer sold a car to one Young for cash and accepted a check in payment for the car. The dealer let Young take the car. The next morning the check was presented to the bank and payment was refused. Young in the meantime sold the car to another dealer.

The higher court held that the first seller could take possession of the automobile from the last purchaser, saying:

"A contract reserving title to an automobile in the seller until pay-

(Please turn to page 340)



for Michigan non-ferrous foundry

NE of the largest producers of propellers for outboard and inboard motors had trouble in the foundry with porous castings.

A Cities Service combustion specialist was called in for consultation. With the aid of the Cities Service Industrial Heat Prover instrument he soon found that the trouble was due to the presence of excess air in the furnace gases and offered suggestions to correct the situation. Result: Scrap loss was reduced from 4100 to 471 lbs. and affected a saving of \$2359.

Countless cases of similar results are now on file. If your operation includes industrial furnaces and

heat treating units of any size or type, you too can profit from such service. Write today for a free demonstration.

FREE! A fact-filled booklet entitled "Combustion Control for Industry" is available upon request. Write Cities Service Oil Company, Sixty Wall Tower, Room 351, New York City 5, N.Y.



# lew PRO Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials,

Finishes, Equipment, etc.

# RIGID COUPLING



TAPER-LOCK coupling for rigidly connecting the ends of two shafts is a new application of the Taper-Lock bushing first introduced for V-belt sheaves and later in the Taper-Lock flexible coupling.

This rigid coupling will take the place of the old type flange couplings in sizes up to and including 2-15/16" but will be furnished also in sizes up to and including 5". They will also replace the ribbed and compression couplings formerly furnished. Dodge Manufacturing Corp., Mishawaka, Ind.

# INSTRUMENT AND METER CLEANING **FORMULAS**

NON-TOXIC, noninflammable formulas for instrument and meter cleaning and rinsing are described as giving maximum

cleaning results leaving no harmful residues to injure the most delicate parts. The solutions may be used with the usual standard equipment now in use. The rinses dry quickly and safely without spotting. Samples will be furnished on request. Zenith Mfg. & Chemical Corp., 52 Beekman St., New York 7, N. Y.

# 146-PIECE TOOL CHEST



"SUPERCHEST" No. 2001 contains sockets and attachments in 1/4", 3/6", 1/4" and 3/4" drives; wrenches; pliers; chisels; screwdrivers, etc., totaling 146 pieces in all. The tools cover a wide range of work

from ignition and electronics to truck, bus and industrial applications. The chest is of heavy gauge steel heavily reinforced and welded. Cylinder lock on the hinged front panel locks the entire chest. J. H. Williams & Co., 400 Vulcan Street, Buffalo 7, N. Y.

# NON-SLIP SAFETY **FLOOR FINISH**

TRAFFIC - TRED is an abrasive floor coating which is applied like paint. It dries to a hard, rough

surface with a tex-ture like coarse sandpaper. It works on steel, wood or concrete, and is said to remove most of the danger from walking areas subject to dampness, greasiness and other slippery conditions. Industrial Safety Products Division, The Watson-Standard Co., 225 Galveston Ave., Pittsburgh 30, Pa.

### SLIMLINE FLUORESCENT FIXTURES



SLIMLINE fluorescent fixtures for use with two 96" T8 Slimline lamps, for standard industrial locations and for textile mill locations are listed as complete individual units (with end caps) or as continuous units (less end caps). They are available with 200 ma. or 300 ma. ballasts. Center lamp support to prevent vibration is available. Reflectors have vitreous porcelain enamel finish. The textile mill fixtures are provided with a peaked top channel which prevents the accumulation of fly, lint, dust and moisture. Wheeler Reflector Co., 275 Congress St., Boston, Mass.

# DIE TRANSFER TABLE HAS **OVERHANGING** TOP

HYDRAULIC elevating table has an overhanging top, counterweighted to provide proper balance when handling

dies weighing up to 300 lbs. Overhanging section serves to bridge the gap caused by the press base extension. The extension can either be removed completely or tilted up to swing 10° back of the vertical position when not in use. Retaining bars are provided on three sides of the table for extra safety. Lyon-Raymond Corp., 7399 Madison St., Greene, N. Y.

# LIGHTWEIGHT DUST HOOD

THIS loose-fitting dust hood weighs only 5 ounces. Visibility is provided through a large, clear, plastic win-The fabric, dow. supported by a head frame, covers and protects the face, head, and neck down



to the shoulders. The hood, to protect workers in operations involving irritating or nuisance dusts, may be worn with goggles or respirator. General Scientific Equipment Co., 2700 West Huntingdon St., Philadelphia 32, Pa.

# STANDING MATS TO COMBAT **FATIGUE**

SPONGE rubber standing mats with firm tile rubber top surfaces for comfortable footing are cut in sizes to fit the re-

quirements of the standee worker, from processed sheets 36 in. by 30 ft. For areas where oil conditions prevail, they are made of oil resistant neoprene with deep etched design both sides to prevent slippage. Flexi-Mat Corp., 215 West Illinois St., Chicago 10, Ill.

## PORTABLE COMPRESSOR

THIS NCD compressor holds a large capacity spray gun at 35 lbs. pressure and delivers 21/2 cu. ft. of air per minute. It weighs 32 lbs. and can be operated from the normal light socket or wall plug. It furnishes a smooth,



continuous flow of air with power and volume ample to apply spray materials without excessive thinning. Available as a separate air compressor or combined with several different complete spray painting outfits. Literature available. The DeVilbiss Company, Toledo 1, O.

(Please turn to page 152)

# DISTRICT SALES OFFICES:



St. Louis (Main 4000)



New York (Plaza 9-8200)



Philadelphia (Locust 4-0247)



Chicage (Whitehall 4-6750)



Boston (Liberty 2-6440)



QUICK SERVICE from

15 District Sales Offices

Of special interest to purchasing agents is the

wide range of highest-grade Monsanto heavy

chemicals and intermediates now available...

Many of these products have been very difficult

To make it easy for you to deal with Monsanto,

fifteen District Sales Offices are ready to give

prompt service on these and many other chemi-

cals for industry. For full information, samples,

prices, simply phone any of the numbers listed

here - or write MONSANTO CHEMICAL COM-

PANY, Desk B, Organic Chemicals Division, 1755

South Second Street, St. Louis 4, Missouri.

to obtain in recent years.

Detroit (Trinity 2-5728)



Cleveland (Superior 3830)



Cincinneti (Dunbar 1414)



**Charlotte** (2-3454)



Birmingham (7-0877)



Houston (Atwood 8-6421)



Akren (Hemlock 6191)



Los Angeles (Richmond 7-7201)



San Francisco (Yukon 6-6232)



Seattle (Main 4203)



Portland, Ore. (Beacon 6704)

In Canada:



Monsanto (Canada) Limited, Montreal (Marquette 4236)

# MONSANTO HEAVY CHEMICALS

Chrome Sulfate (Santotan\*)
Salt Cake (Sodium Sulfate,
Technical)
Sodium Sulfite Anhydrous,
Technical (Santosite\*)
Sulfur Dioxide
Chlorosulfonic Acid
Muriatic Acid
Nitric Acid
Sulfuric Acid†

# INTERMEDIATES

para-Aminobiphenyl para-Nitrobiphenyl ortho-Anisidine para-Anisidine Benzoic Acid, Technical Benzyl Chloride Dichloroaniline ortho-Chloroaniline para-Chloroaniline ortho-Chlorophenol para-Chlorophenol Cyclohexylamine Dicyclohexylamine Dinitroaniline Dinitrochlorobenzene, 46.5° Dinitrochlorobenzene, 48° ortho-Nitrogniline ortho-Nitrochlorobenzene ortho-Phenetidin para-Phenetidin Phenolsulfonic Acid Sodium Benzoate, Technical Thiourea para-Toluenesulfonamide para-Toluenesulfonchloride Toluenesulfonic Acid

\*Reg. U. S. Pat. Off.

tlf you are a large consumer of sulfuric acid, Monsanto's Engineering Sales Department will gladly give you full details on Monsantodesigned contact plants for low-cost production.



SERVING INDUSTRY . . . WHICH SERVES MANKIND

### FLEXIBLE COUPLING



TYPE FCR flexible coupling, with a synthetic rubber insert, is available for shafts 38" to 1½". Features include simple, accurately machined 3-piece construction; oil-resistant synthetic rubber insert for quiet, flexible operation; provided with standard keyways and set screws; requires no lubrication and is not harmed by oil, dust or dirt. The coupling is described as being useful for a wide range of industrial applications requiring flexibility, ruggedness and durabity. Boston Gear Works, Quincy, Mass.

DEVICE WARNS OF GAS HAZARDS EXPLOSILITE is a device that flashes a brilliant red signal when a dangerous concentration of combustible gas is pres-

sent in the surrounding air. It can be used in utility vaults and manholes, in operations in storage tanks and other confined spaces. It has been approved by the U. S. Bureau of mines for use in atmospheres contaminated with methane. It is portable and self-contained, and may be preset for specific concentration of natural gas or petroleum vapors. Bulletin No. DT-4 available. Mine Safety Appliances Company, Pittsburgh 8, i.a.

# INDUCTION HEATER



THIS induction heater delivers a 2½" x 3-15/16" steel blank every 4.8 seconds to the mouth of the forging machine. Every blank is at a closely controlled 2200F. The operator can flip the billets into the dies at high production rates without extra steps or conveyor systems. Because of fast, scale-free heating, heater is said to reduce rejects, and permit cleaner, more precise forgings. Power source is a 700 km, 960-cycle motor generator unit, of which 100 km is held in reserve for larger billets or for a shorter timing cycle. Ajax Electrothermic Corp., Trenton 5, N. J.

# SLITTING MACHINE USES RAZOR BLADES

EMPLOYING ordinary double-edged, three - holed razor blades, the Beck slitter cuts and re-winds standard full width

rolls of cellophane, glassine, paper and other light weight materials into width sizes from ½" up. All four corners of the blades can be used before discarding. Machine requires no special skill, can be handled by one man, and eliminates storing vari-sized rolls of material. The Charles Beck Machine Corp., Terminal Commerce, Philadelphia 8, Pa.

# STEELSTRAPPER TOOL MOUNT



E5 Universal Tool Mount for all models of Acme Steelstrappers has rubber casters for easy portability, four leveling screws on the base for eliminating wobble on uneven floors. The mount bas a 17" vertical movement

without post adjustment, a post adjustment of 21", or a total of 38" vertical movement. The center post is springmounted for easy adjustment when the package falls out of the 17" vertical movement. The strapping tool can be used in a 360-degree circle around the post. Acute Steel Co., 2838-Archer Avenue, Chicago 8, 111.

# FLOOR, RUG AND CARPET MACHINE

MODEL V-A machine for both floor maintenance work and for shampooing rugs and carpets, comes equipped with

or without solution storage tank mounted on the handle. It has a series of easily interchangeable attachments that will scrub, wax, polish, buff, sand, grind or steel-wool floors of all kinds. The machine utilizes a vertical gear reduction motor in a 1/3 hp machine with a 14" brush spread. For extra heavy duty, this model is available with a ½ hp motor. Hild Floor Machine Co., 1313 W. Randolph St., Chicago 7, 111.

# MULTI-PURPOSE HAND TRUCK

AEROTRUKER, a multi-purpose hand truck, may be operated throughout normal life without greasing, due to built-in lubrication, Cast - single - unit frame eliminates constant tightening or replacement of loose



members. Frame is of aluminum alloy, is corrosion-resistant, rust-proof, and can be made spark-proof. Solid rubber tires are guaranteed not to separate from the wheel. Rubber tread is oil and water-resistant, Acrol Co., Inc., 2820 Ontario St., Burbank, Colif.

# RADIUS BRAKE



DI-ACRO radius brake No. 4, with a 24" capacity, has been developed for the forming of duraluminum, chrome molybdenum and other materials of low ductility which would fracture if formed to a sharp "no radius" bend. It is also valuable for forming ductile metals where radius bends are desired because of product design. It can be used in both experimental and production work. Catalog available. O'Neil-Irwin Manufacturing Co., Lake City, Minn.

# CASTABLE REFRACTORIES FOR 3000F

3X Firecrete and 3X Blazecrete are two new castable refractories for service temperatures up to 3000 F. They are

said to offer savings because of their adaptability for application by casting, gunning and troweling. The refractories air harden quickly and can be ready for service within 24 hours after application. 3X Firecrete is recommended for casting or pouring special shapes. 3X Blazecrete was developed for pneumatic application in which it is "shot" into place by compressed air with guns. Johns-Manville, 22 East 40 St., New York 16, N. Y.

# 18,000 LB. STRADDLE TRUCK

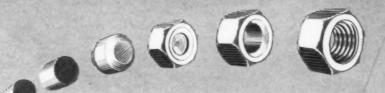


MODEL "M" straddle truck is the same size as the 12,000 lb, model but has a capacity of 18,000 lbs, and a new driver's seat giving greater visibility. "Spring suspension" system is said to insure better riding and steering, to give more traction for driving wheels, to reduce frame stress and tire wear, and to facilitate tra-el over slippery or rough surfaces. Without a load the truck has an average turning radius on level ground of 12½ feet. Hyster Company, Portland 8, Ore.

(Please turn to page 154)

# Scrapless Nut Wire

custom built to meet customers' requirements



SCRAPLESS Nut Quality Wire is not an ordinary steel for common applications. It is a custom built product designed to meet customers' specific requirements for cold heading, cold punching, cold expanding and threading, in the production of a variety of nut shapes on continuous heading machines.

Every step of its manufacture is carefully controlled-from the melting furnaces to the final drawing operation on the wire machines. Each coil of wire is subjected to close inspection and rigid tests with modern electrical testing apparatus.

Youngstown's Scrapless Nut Quality Wire is furnished in various compositions, including AISI standard as well as special sulphurized steels.





# THE YOUNGSTOWN SHEET AND TUBE COMPANY

General Offices — Youngstown 1, Ohio

Manufacturers of Carbon, Alloy and Yoloy Steel

Export Office-500 Fifth Avenue, New York

WIRE - COLD FINISHED CARBON AND ALLOY BARS - PIPE AND TUBULAR PRODUCTS - CONDUIT - RCDS - SHEETS - PLATES - BARS - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RAILROAD TRACK SPIKES.

# PRODUCTION FLOCKING UNIT



I L L U S T R A-TION shows an electrically driven flock agitator, known as the No. FG 12, which provides an even flow of flock to the spray gun. The unit is easy to fill, even when in operation, and there is no

interference with production. Model 172 flock gun used with the unit is light and requires minimum air pressure and volume. When used with this unit and a 25' length of material hose, only 4.5 cu. ft. of air per minute is used at 30 lbs. pressure. Binks Manufacturing Co., 3114-40 Carroll Ave., Chicago 12, Ill.

HEAVY-DUTY DIAL TYPE THERMOMETER POINTER indications may be read from almost any position on a new, heavy duty, dial type thermometer, because

the concave dials are curved at the indicating graduations. Made in 7 temperature ranges from minus 90 to 1000F. Dial sizes are 2", 3", and 5". The thermometer is said to be almost indestructible. Connecting nut and stainless steel stem will withstand pressures in excess of 2500 psi. Bulletin No. 100 available. Qualitrol Corp., East Rochester, N. Y.

# REVERSE MOLD STAMPS



"S - T - M" safety stamps for reproducing raised letters and figures on plastic, glass or rubber products are made with perfect 30 - degree bevel characters, and are designed to produce deep, clear-cut stamping metal molds

for reproduction of precisely formed characters on finished molded products. Character sizes rauge from 1/32" through ½", and all stamps from 1/16" and larger are available in condensed, medium and extended widths. Literature available. M. E. Cunningham Co., 154 E. Carson St., Pittsburgh, Pa.

DOUBLE-ACTION WOOD PRESERVATIVE

NEW treatment for wood is said not only to prevent rotting, but to keep out moisture, thereby reducing possibility of

ing possibility of shrinking and warping. Easier painting of surfaces treated with the preservative is claimed. Wood material can be treated either in manufacture or at time of installation. Application is made by impregnation, dipping, brushing or painting. Furnished in clear and green, clear for use with wood that will receive a clear varnish finish, green for all other cases. Tremco Mfg. Co., 8701 Kinsman Road, Cleveland, O.

# RUBBER-CUSHIONED GOGGLE



THE Panoram goggle is now available with rubber cushions, which are molded to the exact shape of the eyecup and can be slipped into place with no need for stapling, sewing, or cementing. The cushions, made of soft, pliable, non-toxic, Neoprene sponge rubber provide extra protection against dust and flying particles. Pouch-type plastic case has heavily stitched reinforced edges and a flap with a snap hook. American Optical Co., Southbridge, Mass.

PORTABLE ELECTRONIC BAR-TO-BAR TESTER NEW electronic bar-to-bar tester is a compact device for indicating and locating shorts in armature windings. The

test unit contains a vacuum tube oscillator section which generates 3,000-cycle a-c voltage of about 15 volts no load, and an electronic voltmeter section which has an output impedance of 500,000 ohms to the vacuum tube amplifier. The tester is mounted in a 13" x 8" x 8" metal case. It weighs 23 lbs. and operates on 110 volts, 60 cycles, a-c. National Electric Coil Co., 794 Chambers Road, Columbus 16, O.

# 8-DOOR ROTO-FINISH MACHINE



ILLUSTRATION shows 8-door machine for finishing parts whose size and shape are not adapted to standard Roto-Finish processing methods. The machine is similar to the standard one-compartment Roto-Finish machine, except that each flat of the octagon cylinder is fitted with a large size door. Parts are rigidly fixtured to the back of each door, so that surfaces to be finished are presented to the processing mass. The Sturgis Products Co., Sturgis, Mich.

# HARDNESS TESTER

MODEL C-8A, C-12A, and C-16A hardness tester features a spindle housing and beam assembly that may be replaced by the owner without requiring special skill or special tools. Other advantages



claimed: frictionless spindle; more positive tripping; exceptionally light weight. The tester is used for "Rockwell" testing of hard or soft steel, brass, aluminum, cast iron, copper, other metals, alloys, and plastics. Clark Instrument Inc., 10200 Ford Road, Dearborn, Mich.

MACHINE FOR APPLYING MASKING TAPE SEMI-AUTO-MATIC machine for applying standard pressure (masking) tape to drums, roll goods, canisters, car-

tons, etc., on a production basis, is said to have reduced manual tape sealing time by as much as 400% in tests. It has only one moving part. Packages up to 17" diameter are placed between adjustable spring clamps. One complete hand revolution of a swivel arm feeds the tape evenly to the package. The tape is cut by a blade. Swivel arm available in any height (length) up to 28". The Lake Laboratories Co., Clifton Heights, Pa.

# THREAD COMPARATOR

S W A N S O N thread comparator tells at a glance whether a product is oversize, undersize, eccentric, tapered or if lead error exists. The indicator records work visually to accepted ring gage

9

tolerances, eliminating the element of human error without sacrificing accuracy, maker states. The comparator is said to be simple to operate and to be ten times faster at checking gages than the ring gage method. Literature available. The National Automatic Products Co., 23 Whiting St., New Britain, Conn.

LABELS APPLIED WITHOUT MOISTENING "SELF-STIK" labels may be applied to practically any surface by their pressure-sensitive adhesive. No moistening

is necessary. They are applicable for product identification, for attaching instructions directly to a product, and for advertising or sales messages applied to products for self-selling at point of sale. The labels are durable and may be easily removed. Available in all sizes, printed in any number of colors and in any diecut shape. Mystik Adhesive Products, 2535 N. Kildare Ave., Chicago 39, Ill.

(Please turn to page 156)

# **Competition Demands..**



# .. Superior

Competition develops aptitudes but winning skill is the product of aptitudes *plus* experience. You get this plus value to the nth degree at New England Collapsible Tube Company—the first to put toothpaste in tubes... as long ago as 1892!

This continuity of manufacturing experience produces Tubes with important competitive advantages. Our Sheffield Process Tubes are superior—because of this long



# Skill

experience in suiting inner coatings to product, and proved skill in creating display designs for modern merchandising.

Write for our catalogs today. Get the facts about the sales appeal, convenience, and economies that Sheffield Process Tubes offer for your products.

P.S. As an additional service we can also supply the individual printed cartons and complete the packaging of your bulk product in tubes, tins, or jars, ready for distribution.

# NEW ENGLAND COLLAPSIBLE TUBE CO.

HOME OFFICES . NEW LONDON, CONN.

W. K. SHEFFIELD, V. P. CHICAGO 16, ILLINOIS T. C. SHEFFIELD

NEW YORK 18, N. Y., 500 FIFTH AVENUE 3132 CANAL STREET LOS ANGELES 38, CAL., 7024 MELROSE AVE.

EXPORT: 500 FIFTH AVE., N. Y. CABLE "DENTIFRICE", NEW YORK



# "It's QUALITY CONTROL

# that sold me on Boston Gears!"





"Everything is checked and tested. Boston Gear controls its own materials and alloys . . . uses only virgin metals . . . tests its materials for hardness and tensile strength . . . tests its products for shock strength, hardness and wear."

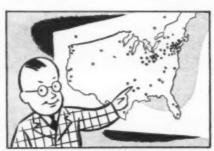
"Engineers can design around Boston Gear stock parts with complete assurance of success ... manufacturers can cut costs safely with these mass production masterpieces. Rigid inspection of all production for exacting tolerances and size of finished products is your guarantee of perfect interchangeability."



"67 years of experience give Boston Gear Works a big edge in know-how and craftsmanship. They've worked out processes and techniques that build extra quality into their products."



"Every craftsman is an Inspector . . . makes sure previous operation is properly done before he starts . . . inspects his entire run and he's double checked by our elaborate Central Testing Lab."

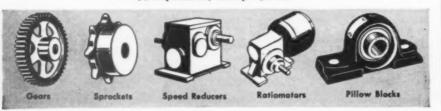


"And Boston Gear products are sold coast to coast through 71 DISTRIB-UTORS. There's one within fast shipping time of your plant... and you can now buy most Boston Gear products right off the shelf! See our THOMAS' REGISTER insert under Gears & Pinions for your nearest source... or write for list of Authorized Distributors.

One of the world's most complete lines . . . 71 Distributors in major cities

# **BOSTON GEAR WORKS**

75 Hayward St., Quincy 71, Mass.



# AIR OR GAS COMPRESSOR



MODEL O-10S air or gas compressor consists essentially of a single-stage, positive-displacement cylinder driven through a crosshead by a Lorain engine. Designed to operate at 250 to 450 rpm, the compressor delivers air or gas at pressures up to 150 psi. The compressor cylinder is equipped with a bottom discharge for gas condensates. The engine produces from 17 to 34 bhp and can operate on diesel oil, clean crude, natural gas or butane. White-Roth Machine Corp., Lorain, O.

FIRST-AID EYE KIT OPTICLEAN first aid eye kit contains 15 eye health items including patch, pads, adhesive strips, eye droppers, eye cup,

cotton balls, cotton swabs, drops, castor oil, boric acid solution, boric acid ointment, and particle remover. All items are housed in a sturdy plastic box and are completely visible. The kit is designed to eliminate many dangers of impromptu first-aid treatments for eye injuries, not to replace professional services. Ohio First Aid & Pharmacal Co., 1285 W. 6th St., Cleveland, O.

# EMERGENCY SOLENOID VALVE

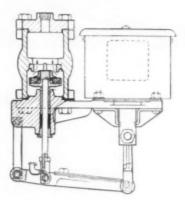
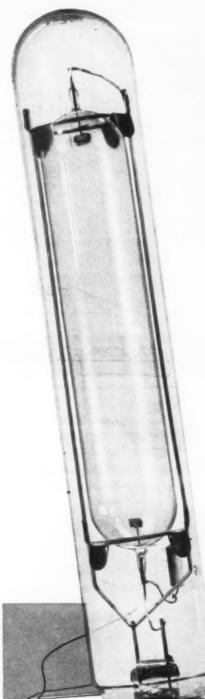


ILLUSTRATION shows a 150 lb. globe type solenoid valve, designed to meet emergency or safety requirements. Intended for service in which the valve is normally open, this Series No. 6000 valve is capable of remaining closed for indefinite periods of time. When an emergency arises, the control element causes the solenoid to be energized, closing the valve instantly. It will remain closed as long as a pressure above 31 lbs. exists on the inlet side. Easy opening is obtained by the use of a simple piping arrangement. Available in 6 sizes, from 34" to 2½". Johnson Corp., Three Rivers, Mich.

(Please turn to page 158)

# How to step up lighting efficiency and save on maintenance, too





# G-E Mercury lamps give high output with long life and low maintenance costs

In many applications, you can save on lighting costs with General Electric Mercury Lamps. One 400-watt type (illustrated) gives 16,000 lumens-nearly twice the light of equivalent incandescent lamps! This means better industrial lighting levels at no increase in operating costs. And because operating life is unusually long-up to 6000 hours depending on the type of lamp and number of starts-maintenance is cut, too.

General Electric Mercury Lamps provide an easy way to increase lighting efficiency and to save at the same time. With more light, workmanship is improved, accidents reduced, plant production increased. For full information, see your nearest G-F Lamp district office, or write for booklet, General Electric Company, Dept. 166 P-3, Nela Park, Cleveland 12, Ohio.

You can put your confidence in-













drying, baking, ng and other

FLUORESCENT Soft, cool light makes work safer,



Rugged lamps that withstand shocks







# Get a Completely Embossed Tag every 1½ Seconds!

You can emboss up to 20 characters at a time on 50 metal tags per minute with this efficient, easilyoperated Pannier "Master Marker." Characters are carried on interchangeable slides; positioned by hand wheels on side of machine head. Die slides are engraved to specification, including standard code characters of the Concrete Reinforcing Steel Institute. Tags are supplied in reels; mount on machine for safe, convenient feeding. A rewind reel is also available. Machine is available with foot or power operation.

# FREE DATA

Complete data on this and other efficient Pannier "Master Marker" Embossing Machines is available on request. Ask for Bulletin D-9.

# OFFICES

Pittsburgh, Pa. Chicago, III. Youngstown, O. Les Angeles, Calif. Philadelphia, Pa.



# HIGH-SPEED WOOD BORING TOOL



FLAT type wood bit, exclusively for use with drill presses, portable electric or pneumatic drills, is said to permit fast, accurate boring of holes in either soft or hard woods, even at angles, through knots and without regard to the wood grain. Feature of the tool, known as the Whiz-Bit, is the long pilot, which starts the hole and maintains hole diameter to plus or minus .005" tolerance. Holes can be bored at angles from 45° to 90° without preliminary chiseling, and to 4½" depth. Available in sizes from 36" to 1½". Rex Laboratorics, 1717 Gent Avenue, Indianapolis 2, Ind.

# LIGHT DUTY DRILL



MODEL F-149 1/4" light duty electric drill delivers approximately 1/12 hp at the chuck. It has a free load speed over 1200 rpm. It operates on 110-120 volts, 50-60 cycle, a-c, d-c current. The drill weighs only 3 lbs. Lightweight, die-cast aluminum alloy housings hold the universal-type motor. Motor is dynamically balanced for smooth operation. Fairchild Industries, Inc., Burlington, Vt.

# PIPE CUTTING OFF MACHINE



NO. 662 "Cut Master" machine is for cutting off small or large quantities of pipe within the range of ½" to 2" inclusive. Maker states 60 pieces of 2" or 150 pieces of ½" pipe can be cut off in 10 minutes. Motor is ½ hp, 10,000 rpm universal, variable speed, geared head type for light socket operation. Effort of operator is reduced to minimum by feed screw mechanism. Machine weighs 225 lbs. and can be moved from place to place. The Oster Manufacturing Co., 2057 East 61st St., Cleveland 3, O.

(Please turn to page 160)

# "1001" Styles of Industrial Gloves to Save Workers' Hands



Suit the glove to the job . . . to cut your costs, step up production

Steel ribbons, horizontally placed, reinforce all wearing surfaces of this rugged Olympic chrome leather gauntlet (#330C). Special palm patch gives added protection without loss of flexibility. . thumb reinforced with match strap. . . 2" cuff protects wrist. . . glove entirely sewn with steel thread.

These features, typical of the outstanding Olympic glove line, produce long-wearing qualities at low cost. Styled for men or women, Olympic work gloves are used by hundreds of manufacturers wherever work stoppage or slow-down is threatened by hand injury. Remember—there's an Olympic glove for every job!

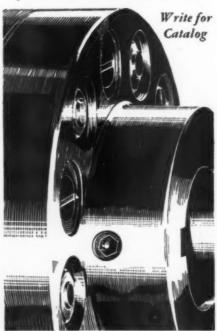
FREE Send for Illustrated Catalog of Safety Work Gloves, Finger Protectors and Safety Apparel

OLYMPIC GLOVE COMPANY Inc. 95 Madison Ave., Dept. 9, New York 16, N. Y.



# FLEXIBLE COUPLINGS

Standard Equipment on America's finest Direct-Connected Machines



AJAX FLEXIBLE COUPLING CO. INC.

The proof of value is the Pedigree . . .

In boxes, too!



PROOF OF Quality
PROOF OF Service
PROOF OF Fair Price



**THE ENGLISH SETTER**, stately in appearance, has been favored as an excellent bird-dog by sportsmen for almost four centuries. He is very gentle and lovable in disposition. He needs plenty of space and exercise in order to be happy, so never confine him to close quarters!

A box with a pedigree? Yes, you can trace a Union 100% Kraft corrugated container all the way back to Union's own forests. Every step in manufacture, from tree to finished box, is quality-controlled by *one* responsible management, operators of the largest Kraft pulp-to-container mill in the world.

And more than that: For more than 75 years Union has been the leader in paper packaging, producing specification bags for hundreds of industries.

The same skill in production, the same vast forest resources and mass production economies

which have put Union at the top in paper packaging have also built a containerboard business which last year accounted for nearly 6% of America's total tonnage of Kraft boxes.

Today Union's board is going into corrugated containers bearing the pedigree mark of the famous Union shield.

This emblem identifies an organization which, for three quarters of a century, has been fully conscious of its responsibilities to customers who must depend on the reliability of their container source for the continued operation of their own plants.

# UNION Corrugated Containers UNION BAG & Paper Corporation

Principal Offices: WOOLWORTH BLDG., NEW YORK 7, N. Y.

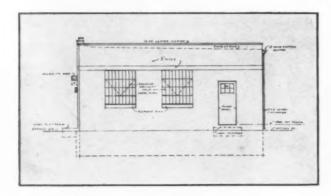
Corrugated Container Plants: SAVANNAH, GA. . CHICAGO, ILL. . TRENTON, N. J.





# with CONCRETE

- the small extra first cost of test samples pays off in assurance of efficiency and durability of the finished structure.



# with TRACING CLOTH . . .

The small extra first cost of Arkwright Tracing Cloth, over that of tracing paper, repays many times over in the efficiency and durability of valuable drawings.

Arkwright gives both immediate and future advantages. The expert work of the draftsman is made permanent. Your investment in time and money is backed by sharp, clean reproductive quality. Under repeated use - or on file for subsequent need -Arkwright assures perfect drawing performance year after year.

For every drawing worth keeping for future use use permanent Arkwright instead of perishable tracing paper. Send now for generous samples and prove this superiority. Sold by leading drawing material dealers everywhere. Arkwright Finishing Company, Providence, R. I.

# The Big Six Reasons Why Arkwright Tracing Cloths Excel

- 1. Erasures re-ink without feathering.
- 2. Prints are always sharp and clean.
- 3. Tracings never discolor or go brittle.
- 4. No surface oils, soaps or waxes to dry out.
- 5. No pinholes or thick threads.
- 6. Mechanical processing creates permanent



# ARKWRIGHT AMERICA'S STANDARD FOR OVER 25 YEARS

# SPECTACLE-TYPE GOGGLE



OVER 90% protection is claimed for this spectacle-type goggle, with a "double-duty" semi-cup lens design that gives full protection at sides and bottom. It leaves a narrow opening only at top to prevent fogging. Lenses are of shatterproof Impax plastic, available in clear, light green, medium green, or dark green. Frame is strong, but light, with lenses locked in deep channels. Entire goggle weighs less than 58 ounce. Watchemoket Optical Co., Inc., Providence, R. I.

# SMALL WATER DEMINERAL-

SELF-CON-TAINED cartridge model demineralizer unit is said to produce guaranteed effluent water, equal to

distilled water or better. Flow capacity is from 5 to 8 gph. No heat or steam is required, and the water delivered is free from calcium, magnesium and heavy salts. The cartridge comes packed with 4-bed activated ion exchange resins and has a capacity for removing approximately 1100 grains of dissolved ionizable minerals. Penfield Manufacturing Co., Inc., 19 High School Ave., Meriden, Conn.

### ELECTRIC IMPACT WRENCH



NEW Thor 38" universal electric impact wrench, trademarked "Packy" is a rugged, well-balanced tool weighing slightly over 6 lbs. It has many applications including driving nuts, bolts, cap screws up to 3/8" thread size; driving studs up to 1/2" thread size; removing broken studs (using Ezy-out extractor); drilling holes in steel to 1/4", driving rotary files, driving burring tools, etc., etc. The wrench has a free speed, forward or reverse, of 2150 rpm, strikes 2000 blows per minute, and operates on a-c or d-c, 60-cycles. Circular No. 1025 available. Independent Pneumatic Tool Co., 175 State St., Aurora, Ill.

(Please turn to page 162)









These are only a few of the many, many types of applications where Master Speedrangers can help you do a better job. These Speedrangers with their stepless variable speed operation assure exactly the right speed for every operation . . . for each operator . . . the right speeds for each change in the consistency or shape of the material being processed. Such variable speed operation gives you plus value in higher rates of production, a better quality product and more efficient performance of your equipment and your operators.

Master Speedrangers provide this infinitely variable speed in conpact, all-metal, mechanical variable speed units in a wide range of types and in sizes up to 5 horsepower.

# variable speed operation helps you

An extra feature of Master Speedrangers is their extreme flexibility, for they can be made to incorporate an electric motor, a variable speed unit, a gear reduction unit and an electric brake . . . all standard Master units that easily combine into a compact, integral power package. This provides exactly the RIGHT horsepower, the RIGHT range of speed, the RIGHT features, in a unit that you can use RIGHT where you want it.

Write for Data 7525, a new 24-page book on Speedrangers, and see what a real job they can do for you.

THE MASTER ELECTRIC COMPANY . DAYTON 1, OHIO

# make a good job better





more than

80

Oakite
Materials
to solve
your cleaning
problems

# SERVICE is our middle name

A ND has been for forty years. The other two? - materials and methods. Combine all three-quality cleaning materials, plus worksaving cleaning methods, plus the in-plant help your Oakite Technical Service Representative gives you at the drop of a cleaning question -and you've got the reason why you can always depend on Oakite for the best in production and maintenance cleaning. The services of your local Oakite Technical Service Representative, and instructive Oakite literature are yours for the asking. Just write to Oakite Products, Inc., 54 Thames St., N. Y. 6, N. Y.

> Technical Service Representatives Located in Principal Cities of United States and Canada



SPECIALIZED INDUSTRIAL CLEANING

MATERIALS . METHODS . SERVICE

### SMALL PARTS CABINET



ILLUSTRATION shows small parts cabinet that measures 13" high, 36" wide and 12" deep. It has 18 drawers, each provided with 2 drawer dividers. Drawers are 27%" high, 5-9/16" wide, and 11¾" deep, and every drawer and divider has an individual label holder. Cabinet is made of heavy-duty steel with baked-on olive-green enamel finish. Standard Steel Equipment Co., Inc., Dept. PP, 117-20 14th Rd., College Point, N. Y.

# TRIPLE BEAM BALANCE



PLATFORM and beams of this triple beam balance are made of stainless steel, affording protection against heat, corrosion and chemicals. Self-aligning bearings of polished agate insure minimum friction and full contact along the knife edges at all times. Sliding-type poise gives stability and freedom from swinging when scale oscillates, thus maintaining sensitivity. Model shown is No. 750-S with metric calibration. Also available in avoirdupois standard with decimal and fractional ounce calibrations. Ohaus Scale Corp., 10-14 Hobson St., Newark 8, N. J.

# ELECTRIC IMMERSION HEATER



THERMOSTATICALLY controlled electric immersion heater can be connected to any hot water tank or boiler to provide electrically generated heat. It is fitted with a bushing with a 1-inch tapered pipe thread, or a 1½" thread if desired, and a pilot light. Installation is simple—heater is inserted in the boiler and then connected to any convenient electric receptacle. Vulcan Electric Company, Danvers, Mass.

(Please turn to page 166)



Double Gauge Oxygen Welding and Cutting Regulator, made by John Nageldinger & Son, Inc., New York, "Manufacturers of apparatus for the regulating and control of compressed gases since 1880." The cutaway illustration of the regulator is full-scale. All seals in the body are metal-to-metal, no gaskets being used. All parts, excepting the steel spring and nylon valve seat, are copper and copper alloys made by The American Brass Company.

HIGH GAS PRESSURES and sand castings just don't get along together. In fact, when test stand rejects on this job ran as high as 30% at several thousand pounds pressure, something had to be done about it . . . for not only the castings, but all machining operations were a total loss.

The manufacturer consulted The American Brass Company. Dies were made with a few slight changes in design and Anaconda Die Pressed Forgings, made of extruded rod, were supplied as illustrated here and on the following page.

Good news followed quickly: "Leakers" became a thing of the past, for these twice-wrought, dense-



grained forgings are gas, air and water-tight. Rejects during machining dropped from an average of 18% to less than 1%. Combined tooling and machining costs were cut in half!

In this instance, the switch to Anaconda Die Pressed Forgings resulted in a net saving of 22%—with rejects and costs down...dependability and profits up.

ANACONDA from no sumer

THE AMERICAN BRASS COMPANY, General Offices: Waterbury 88, Connecticut

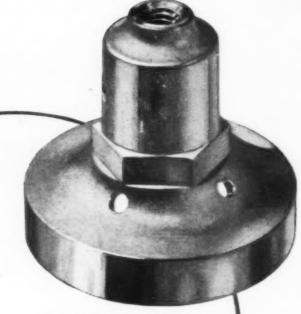
Perhaps similar savings could be made on your product . . . •



The five Anaconda Die Pressed Forgings illustrated here in slightly less than full scale are being used in the Nagel-dinger Regulator shown above. See the previous page for the complete story.



CONSISTENT DIMENSIONAL ACCURACY - LONG TOOL LIFE



# Don't be misled by their good looks!

Of course they're handsome, but make no mistake—these die pressed forgings are huskies throughout...solid, dense-grained working metal, with twice the strength of ordinary sand castings.

They're easy to machine, too—and more uniform than peas in a pod. Often it's simply a matter of drilling and tapping a few holes, threading a boss, or machining a mating fit—and they're ready for assembly.

If the production of unusual shapes is taking too big a bite out of your profits, send us a drawing, pattern or sample part, together with functional data. There's a very good chance that we'll be able to help you...we've done it hundreds of times for others. For general information on Anaconda Die Pressed Forgings, write for Publication B-9.

# THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: Anaconda American Brass Ltd., New Toronto, Ont.





AVAILABLE IN COPPER, BRASS, BRONZE AND SPECIAL COPPER ALLOYS

# Engineered Papers RIEGEL-MADE TO YOUR SPECIFICATIONS



X-ray film carries a particularly sensitive emulsion on both sides. For the individual wrapping of these films, Riegel has made a very soft, smooth sheet...non-scratching...and completely non-reactive to the emulsion.

We know how to make paper to your own most exacting requirements...regardless of whether you want us to merely match your present grade, or develop something entirely new and novel. For paper of any type, always consult Riegel first. If by chance we can't make it, we will gladly tell you who can.

Riegel

PRODUCERS OF TECHNICAL PAPERS FOR INDUSTRIAL LEADERS SINCE 1862

Riegel Paper Corporation • 342 Madison Ave., New York 17, N.Y.



# Cut Carton Closure Costs with

# **ACME SILVERSTITCHER**



Here's an Acme Silverstitcher at work

---wire stitching is neater, making
stronger cartons in half the time
taken by previous methods.

# Here's how Duro Test did it

The Duro Test Corporation wanted stronger cartons assembled at less cost. So they called in an Acme Shipping Specialist.

An Acme Silverstitcher now enables this company to pack its fluorescent fixtures in a stronger box in half the time—saving fully 50% of the previous assembly time cost.

Why not find out what an Acme Silverstitcher (and Acme Silverstitch box-stitching wire) can do for your company. Start now by mailing the coupon below for full information.

STITCHING WIRE DIVISION

# ACME STEEL COMPANY

NEW YORK 17

ATLANTA

CHICAGO 8

LOS ANGELES II

2838 Archer Avenue, Chica Gentlemen:		
Send me your free booklet o	lescribing Acme Silverstitchers.	
NAME		
COMPANY		
ADDRESS		
***************************************		

### STUD PULLER

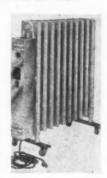




ILLUSTRATION shows stud puller with a capacity of ½" to ½" built in to one unit. No collets, wedges, or other parts are need to adjust it to different sizes of studs. Three jaws automatically close to stud size and grip when pressure is applied. The harder the pull, the harder the grip, but they do not wedge. The tool turns on center. A ½" stud can be "pulled" with less than 1" clearance between the stud and surrounding obstructions. Snap-On Tools Corp., Kenosha, Wis.

# ELECTRIC STEAM RADIATOR

THIS electric steam radiator makes possible an electric heating system for plants which generate their own electricity or obtain low rates, and for plants, docks, etc., which cannot economically be heated by other systems. The radiator is



thermostatically controlled to maintain temperature, and shuts off automatically when temperature is reached. It does not absorb oxygen from the air and has no exposed wires. Available in portable and stationary models, in 6 sizes, 110-220 volts a-c, d-c. Koral Electric Mfg. Co., 43-22 Van Dam St., Long Island City, N. Y.

# CARBIDE THREAD RING GAGES



GO and Not Go carbide Dualock adjustable thread ring gages are said to eliminate the hazard of gage wear on close tolerance work. They are described has having the long wearing qualities and stability required for use as master or reference gages. They are adjustable; relieved at the major diameter to preclude the possibility of interference; convoluted on both ends to remove partial threads up to the start of the full thread; precision lapped to remove grinding marks and irregularities on the thread flanks. Pratt & Whitney, Division Niles-Bement-Pond Co., West Hartford 1, Conn.

(Please turn to page 168)





# SPRING LOCK WASHERS

with "Controlled Tension" built in FOR LONGER LASTING SERVICE...BETTER QUALITY

Diamond G "Controlled Tension" in every spring lock washer makes assemblies tight . . . keeps them right. Garrett's exclusive "Controlled Tension" is the secret of the success of Diamond G Spring Lock Washers . . . the result of absolute, precision control in manufacturing. Every lot of Diamond G Spring Lock Washers is "torture-tested" to assure maximum quality and peak performance. Write for Lock Washer Booklet.

# WASHER FOR EVERY NEED

Whatever your needs in spring lock washers, there's a Diamond G to answer it—high carbon steel, bronze, aluminum, stainless steel and monel metal spring lock washers finished or plated with cadmium, nickel, brass, copper or other finishes . . . plus the new Diamond G Aluminum Spring Lock Washer that combines lightness of aluminum with the strength and durability of steel.

Garrett also manufactures a complete line of flat washers, spring washers, springs, stampings, hose clamps, snap and retainer rings. Write for technical booklet on small parts.

# DIAMOND G PRODUCTS

Manufactured by GEORGE K. GARRETT CO., INC. 1421 Chestnut St., Phila., Pa.

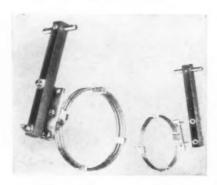


# ELECTRIC PAINT PADDLE



NO. 31 Junior paint mixer is a pocketsize mechanical paddle for blending pigments or small batches for interior painting. The tool is driven by a fractional hp motor which operates on 110 volt a-c current. Mixing parts can be snapped apart from the motor for carrying and cleaning. Splash plate prevents the material in the can from getting out of hand. Set screw clamp can be used to hold the mixer in position. Red Devil Tools, 130 Coit St., Irvington 11, N. J.

# NEW PLUG-IN LINKS



MATCHING of standard tank coils to a wide variety of impedances is said to be possible with these new plug-in

links. On present swinging link assemblies it is only necessary to replace the swinging link arm with a new one into which the link coils are plugged. This is accomplished by removing the pin that forms the arm hinge and inserting the new arm. Plug-in links now available are made in 1-3-6 and 10 turns. Bulletins available. Barker & Williamson, 237 Fairfield Ave., Upper Darby, Pa.

### HIGH LIFT DEVICE

HI-LO-STACK, a high-lift low-clearance device, is offered in a special design for the Clark Clipper fork - lift trucks, both gaspowered and electric battery - powered machines of 2,000 lbs. capacity. The device on the



Clipper permits an overall collapsed height of 83", a maximum lift of 130" and a "free lift" of 64" without increasing the overall height of the machine. Clark Equipment Co., Industrial Truck Division, Battle Creek, Mich.

# LIGHTWEIGHT HAMMER STAPLER



THIS new hammer stapler weighs 1 lb. 14 oz., with almost all the weight in the stapling head, and can drive six steel staples in the time it takes to put in one tack with a hammer. The handle is shaped to conform to the human hand for greater comfort. Staples are fed automatically, and can be driven into hard wood or light metal with one tap. The stapler is described as virtually jam-proof and extremely durable. The E. H. Hotchkiss Company, Norwalk, Conn.

(Please turn to page 170)

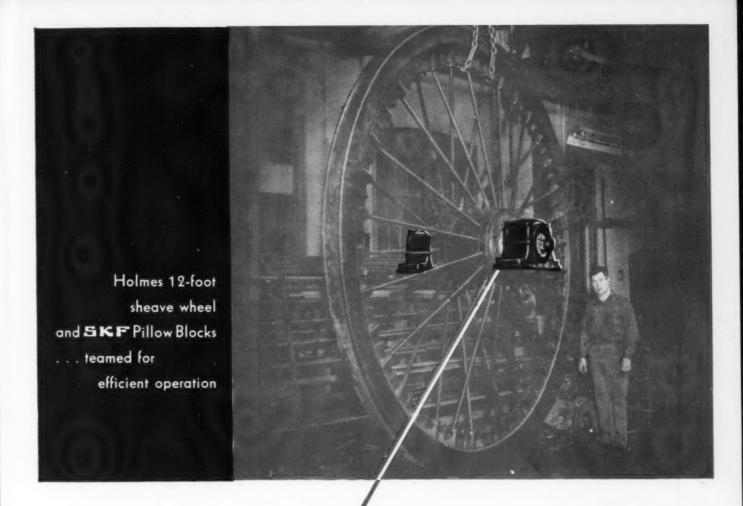
# SPONGE RUBBER SHEETS STRIPS GASKETS

Can be delivered to your specification in three days at the country's most competitive prices from the country's newest and most modern rubber works.

MECHANICAL RUBBER



DORIS DRIVE WARWICK NEW YORK





A sheave wheel takes a lot of punishment, and mine operation depends on its smooth-running efficiency. That's why Robert Holmes & Bros. specified SDAF Pillow Blocks... on the five 12-foot diameter, bicycle type, sheave wheel assemblies furnished for Peabody Coal Company's new mine at Pana, Illinois.

Here are features of BKF Pillow Blocks . . . widely used in mines, mills and factories. Check this list:

- Rugged stands up under heavy usage
- Easy to Install and Service a few simple steps
- Minimum Maintenance—equipped with

  □ CF's exclusive Triple-Seal rings to keep
  lubricant in . . . dust and water out!
- Versatile there's a pillow block for every job!

Complete engineering service is available. Write us. Sign Industries, Inc., Philadelphia 32, Pa. 6616

PILLOW BLOCKS ENGINEERED BY SICE

# CHESTER

for Lower Costs



made by the Hoist Division of The National Screw & Mfg. Co., are expertly designed and built to give you rapid lifting and lowering with utmost economy. They are strong, safe and dependable.

Timken Bearings reduce friction on all working parts and insure smooth operation and long life. A retaining brake holds the load at any position.

In sizes from ½ ton to 40 tons, this complete line of cost-saving hoists is furnished in many adaptations, such as Extended Hand Wheel, Twin Hook and close headroom types such as Army, Clevis Connected, etc.

CHESTER DIFFERENTIAL HOISTS are designed for use where occasional lifting is required at a minimum expense.

Made in 16, 16, 1 and 116 ton sizes

Made in ¼, ½, 1 and 1½-ton sizes, these lower priced hoists are light and portable, hold their load at any point and will not self-lower.

chester trolleys are furnished in either plain or geared types, with either Timken Roller or plain bearings. They are well balanced and give excellent service.

Send Coupon or Write for Full Information

# THE NATIONAL SCREW & MFG. CO.

**Chester Hoist Division** 

Lisbon, Ohio

The National Screw & Mfg. Co., Cl	nester Hoist Div., Lisbon, Ohio
Please send information on	
Name	
Company	
Address	
	"p 3

# INDUSTRIAL PRESSURE SWITCH



THIS industrial pressure switch is for making or breaking an electrical connection when hydraulic fluid reaches a predetermined pressure. It is used as safety control on pumps, or as control on automatic hydraulic machines or presses where pressure control is required or where cycling is controlled by fluid pressure. Units available in 6 pressure ranges from 50 psi minimum to 10,000 psi maximum, for water, oil, or air service. Hydraulic connection tapped with ¼" pipe thread. Switch housing drilled for ½" conduit connection. Saval, Inc., 1915 East 51st St., Los Angeles 11, Calif.

# AIR COMPRESSOR "GROWS"



BASIC compressor that can "grow" to meet expanding requirements for air uses 18 principal parts to construct a line of 48 different models of 1, 2, 3, 4, or 6 cylinder pumps in single or two stage types. All parts are interchangeable from the smallest to the largest pump. Compressors are available in sizes from ½ to 40 hp with 2.5 to 275 cfm capacity at 30 to 300 lbs. pressure in vertical, V type or side angle construction, with single, twin, or radial staggered cylinder arrangements. Air-Flo Compressor Co., Akron, O.

### SMALL PORTABLE WELDER



THS small, but powerful, 150-ampere d-c welder, known as the Sureweld, can be carried in small panel trucks, wrecking cars, station wagons, or trunk compartments of large cars. The unit weighs only 330 lbs. and supplies its own power

(Please turn to page 172)

# Big Game Hunter is Wild about...

Elions have little chance of escaping from this tough General Electric Textolite is versatile.

If you have an application that requires a non-metallic material with excellent electrical, mechanical, chemical, and thermal properties, it will be to your advantage to investigate Textolite. Reduced costs and product improvement may result.

G-E Textolite offers you a choice. It is produced in many grades—over fifty. And each of these grades has an *individual combination* of properties. None are alike. With this wide selection you can be assured of getting a laminated plastics with the *correct* properties for your application. Plastics Division, Chemical Dept., General Electric Co., Pittsfield, Mass.

G-E LAMINATED TEXTOLITE IS SUPPLIED IN:







MOLDED-LAMINATED



PARTS



SHEETS, TUBES

# GENERAL



ELECTRIC

# SEND FOR THIS HELPFUL BULLETIN TODAY— IT'S FREE

Write for your copy of "G-E Textolite Laminated Plastics." It lists grades, properties, fabricating instructions, and detailed information about Textolite industrial laminates.

General Electric Company Chemical Department (10-3) One Plastics Ave., Pittsfield, Mass.

Please send me the new G-E Textolite laminated plastics bulletin

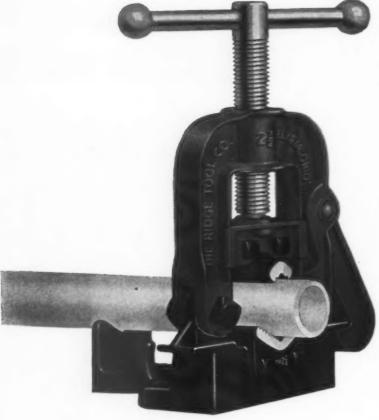
Name \_\_\_\_\_

Address .....

City.....State.....

# THIS BENCH PIPE VISE

# Saves Time



# with handy pipe rests and benders ...

efficient. Integral pipe rests support pipe firmly. Handy built-in benders won't mar or flatten pipe. LonGrip jaws of heat-treated tool-steel have bulldog grip but are easy on polished pipe or tubing. 8 sizes for pipe to 6." PIEDID bench, post, stand and Tristand vises, yoke and chain types...give you more for your money. Buy them at your Supply House.

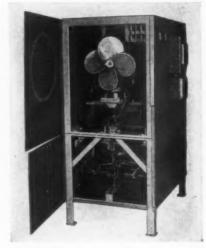


THE RIDGE TOOL CO. • ELYRIA, OHIO

(Continued from page 170)

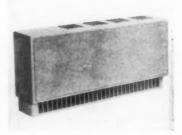
with an Onan CK, 10 hp air-cooled engine. Built-in dual control is standard equipment. The main current tap switch has 8 settings ranging from 45 to 180 amperes. Fuel consumption when operating at welder rating is approximately 0.7 U. S. gallons per hour. D. W. Onan & Sons, Inc., Minneapolis 5, Minn.

# 2400 AMP. D-C RECTIFIER



TYPE N2400CX is a low-voltage high-amperage rectifier suitable for supplying direct current for a number of industrial processes such as electro-plating and cleaning, production testing of d-c motors and equipment, etc. A-c input is 440 volts 3 phase, 50/60 cycles. D-c output voltage is continuously variable from 0 to 6. D-c output amps is 2400 continuous rating. Output voltage can be adjusted from remote locations or made to respond to automatic controls. Dimensions: 31" x 48" x 71". Electronic Rectifier Co., Inc., Rochester 2, N. Y.

# CABINET-TYPE UNIT HEATER



SERIES R Webster-Nesbitt unit heater features modern cabinet design and variable fan speed adjustment. Low speed makes the unit suitable for installations where low noise levels are essential; adjusted to a higher speed it can be used for any commercial or industrial application. Heating element is non-ferrous, consisting of copper tubing and aluminum fins. Suitable for steam or forced hot water circulating systems. Available in four sizes, with 1, 2, 3, 4 or 5 fans. Literature available. Warren Webster & Company, Camden, N. J.

(Please turn to page 174)

# IS YOUR PRODUCT LISTED HERE?

ELECTRIC RANGES

DEEPFREEZE UNITS

WATER HEATERS

STEEL FILING CABINETS

WALLBOARD

WALLBOARD

MATTRESSES

Bemis' sturdy kraft paper covers get these and many other products to market with easy handling, low shipping charges, and ample protection.

Bemis covers are slipped over the product in a jiffy to seal out dust and dirt. With this scuffresistant cover, the product can be stored for months and be ready to go onto the display floor sparkling fresh at any time.

You can probably save substantial sums on shipping charges alone by talking with the Bemis Paper Bag Specialty Man.

# BEMIS BRO. BAG CO.

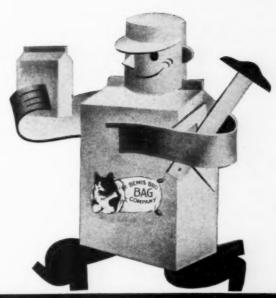


PAPER SPECIALTY PLANT

South Vandeventer, St. Louis, Mc

(or if it is even remotely related)

Then...see how BEMIS can serve you with Good Packaging at Low Cost



# **FILL OUT AND MAIL THIS COUPON TODAY**

Bemis Bro. Bag Company, Paper Specialty Plant 1064 South Vandeventer, St. Louis, Mo.

How can Bemis help cut packaging costs for our products? We manufacture

Name

Firm Name\_

Street

City

State



first for custom-cut

GEARS

We have manufactured precision gears to customers' specifications for nearly 30 years. Our production equipment comprises modern machine tools and our facilities are ample to meet all demands for the mass production and prompt delivery of such gears.

Our engineers will be glad to work with you on any problems you may have pertaining to gear design. Recommendations as to proper design for LOWER COSTS—cheerfully given. Once your specifications are in our files, reorders are filled automatically. LET US QUOTE ON YOUR REQUIREMENTS NOW!

YOU FURNISH THE SPECIFICATIONS . WE'LL PRODUCE THE GEARS

PERKINS MACHINE & GEAR Co., Springfield 2, Mass.

PERKINS MAKES in all materials, metallic & non-metallic:

Helical Gears, Bevel Gears, Ratchets, Worm Gears, Spiral Gears, Ground Thread Worms

Our extensive facilities and modern machine tools are also adaptable to the manufacture of all kinds of various parts other than gears, such as the following:

SPROCKETS · SPLINED SHAFTS · SCREW MACHINE PARTS

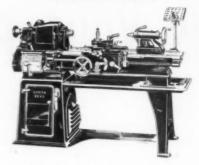
up to 21/4" in diameter.

We are also exceptionally well equipped to build, to your specifications, such mechanical units as -

PUMPS · SPEED REDUCERS & COMPLETE MACHINES

either in experimental or production quantities. Our well-known reputation is your guarantee of satisfaction. Let us quote on your requirements.

# 13" SWING LATHE



THIS new 13" swing toolroom and quick change gear lathe features a head-stock spindle that has a 13%" bore and will take No. 5 South Bend collets which have a maximum capacity of 1". New tailstock base wiper system is designed to keep the bed ways for the tailstock base free of chips, grit and dirt. Also featured is the one-point oiling system for reverse lever bracket and twin gear bearings, Catalog No. 73 available. South Bend Lathe Works, South Bend 22, Ind.

# INDUCTION MOTORS



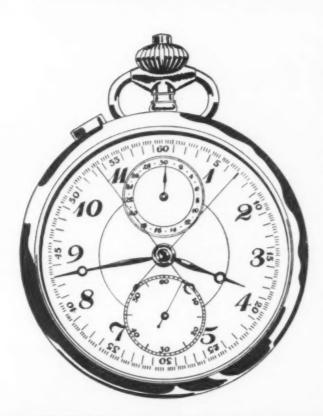
EXTRA-LOW starting kva squirrel cage induction motors, Design X, are available in flange-mounted type (illustrated) and coupled two-bearing type for direct coupling to 514, (00 and 720 rpm air compressors. Line permits full-voltage starting (across-the-line) with a starting kva of only 425% as compared with 550% starting kva of NEMA Design B motor. Publication No. 195 available. Electric Machinery Mfg. Co., Minneapolis 13, Minn.

# INDUSTRIAL AIR CIRCULATORS



THESE industrial and commercial a-c air circulators are available in 24" and 30" sizes with four styles of mounting acces(Please turn to page 176)

Maximum speed of assembly reduces costs—helps you get True
Fastener Economy. The accuracy and uniformity of RB&W Carriage, Machine and Lag Bolts are the products of more than a century of continuous research and progressive development in fastener manufacturing
... backed by the skill of four generations of RB&W men and women.



Plants at: Port Chester, N. Y., Coraopolis; Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland, Portland, Seattle. Distributors from coast to coast.

THE COMPLETE QUALITY LINE

104 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

# **BUSINESS IN MOTION**

# To our Colleagues in American Business ...

A rather recent development in the housing field is the combination screen and storm window. This is installed permanently, and greatly eases the otherwise difficult job of changing from screens to storm windows and vice versa. An exceedingly interesting new window of this general type has just been shown to Revere because it is made of a Revere brass.

The new window is entirely brassframed, and fits flush into the house window, making it wind-and-weather tight. It has two brass-bound glass panes sliding in brass channels and held firmly in place by a simple brass slide. These panes,

either or both, can be removed by hand in a few seconds from inside the house, and a screen panel substituted. At the bottom of the window is a narrow brass insert which can be removed if only a small amount of ventilation is desired. An additional feature is the provi-

sion of a slip joint with 5% inch play to take up expansion and contraction such as sometimes occurs, particularly in new houses, and to permit adjustment to older houses whose windows may not be quite true or uniform in dimensions.

Brass is a generic term, because copper and zinc can be successfully alloyed in various proportions. Thus there are many brasses. In addition, each is available in different tempers, gauges and the like. The manufacturer of this window said that he had always regarded brass as a quality material, and never thought of using anything else. Since the method of

fabrication requires severe forming, including some 180-degree bends, he came to Revere for assistance in selecting the right alloy, temper and annealing technique. The result is a window that is good looking, with a golden red color. Under difficult weather conditions, as at the seashore, it stands up and should outlast the house. Naturally, it cannot rust, rot, or warp.

Revere's collaboration with the window manufacturer is typical. When requested, we are delighted to tell all we know about our many metals, not only the brasses, but also bronzes, coppers.

and aluminum alloys. These are made in various forms, including sheet and strip, bar, rod and wire, forgings, and extruded shapes. The latter, incidentally, in brass, copper and aluminum, have many architectural uses, including windows, thresholds, hand rails and the like.

We regard every material as having its own advantages, many of which are not shared with other products. That is why there are so many different Revere metals and alloys, offering a wide choice. This diversity of products, and complete knowledge about them, is customary in American industry. No matter what any supplier makes, he is well informed about it, and is only too glad to share his knowledge. After all, his customers make it possible for him to increase his business and his knowledge. In other words, you pay for both experience and materials. Are you using both?

# REVERE COPPER AND BRASS INCORPORATED Founded by Paul Revere in 1801



Executive Offices: 230 Park Avenue, New York 17, N. Y.

(Continued from page 174)

sories including floor column, counter column, ceiling and wall bracket. They offer a 98-degree range of adjustment to direct breezes where required. Other features are: two-speed, ball-bearing capacitor motors, full quiet-type aluminum blades. Twenty-four inch fan delivers 5000 and the 30" fan delivers (500 cu. ft. of air per minute. The Emerson Electric Manufacturing Co., St. Louis 21, Mo.

# UNIVERSAL HAND SHEAR



THIS hand shear, called the Jacques Universal Shear, features a medium size model up to 50" with a welded steel base and a heavy duty model in 55" and 60" sizes with a Feavily reinforced flame-cut base. It can be used for fast and accurate hand cutting of paper, rubber, mica, cardboard, asbestos, light metal, etc. Dovetail lock on the table gauge gives absolute alignment while allowing angular adjustment for angle cutting. Clamp is adjustable for thickness of work and a worm gear arrangement adjusts drop bed and back gauge. Hobbs Mfg. Co., Worcester 5, Mass.

# BRAZING MACHINE



STATIONARY brazing machine, for brazing and silver soldering of electric generator and armature coil ends in repair shops, is known as the CBG-24. It is said to eliminate guesswork, costly make-shift brazing set ups, and to insure uniform brazing results that meet the most rigid specifications. It can accommodate armatures from 18" to 42" in diameter. All common forms of brazing alloys may be used, such as foil, wire, strip and powder. Dimensions: 49" high; 24" wide; 99" long. American Electric Fusion Corp., 2608 W. Diversey Blvd., Chicago 47, Ill.

(Please turn to page 178)

# You get 6 big advantages with New LTG

Flex-a-Power...

The only unusually rugged plug-in or trolley busway in 2, 3 or 4 pole construction in

one compact housing.

Pre-fabricated LTG FLEX-A-POWER — rated 50 amps — 250 v, AC or DC — supplies power for fluorescent lights and power tools. It provides both trolley power take-off and a continuous outlet — you can tap at any point . . . ideal for industrial plants, offices, stores, arenas, work shops and garages. Here are more new features:

- **EASY TO INSTALL** simplified hanging and joining methods speed up installation.
- 2 IT'S ECONOMICAL two or more circuits can be run in one housing controlled separately.
- PERMITS BALANCED LOADS plugs or trolleys are polarized which provides a convenient means of balancing loads.
- 11'S REALLY RUGGED rigid construction of housing itself prevents sagging only 2 hangers needed for each 10 ft. section.
- MORE FLEXIBILITY'— standard fittings such as elbows and radius sections permit economical custom installations— easy to disassemble and relocate.
- GREATER CONVENIENCE trolley with silver alloy contacts may be inserted or removed at any point along the run no "drop-out" section required.

FOR MORE INFORMATION, write for circular TEC-3, THE TRUMBULL ELECTRIC MAN-UFACTURING COMPANY, Plainville, Conn.

Men Who Observe the Best Electrical Practice Make It a Practice to Use

TRUMBULL TELECTRIC

TRUMBULL'S TRAINLOAD OF NEW PRODUCTS

G

# MUSIC Spring Use



**Uniform** by all the measurements of quality spring wire. Rigid control of chemical composition and processing methods assure its uniformity and structural soundness. Our specialized coiling, twist and bend tests are added safeguards of dependability.

You can depend on Keystone Music Spring Wire — as well as our other manufacturers' wires — to satisfy your most exacting requirements.

# KEYSTONE STEEL & WIRE COMPANY PEORIA 7, ILLINOIS

# UNIQUE TAP HOLDER



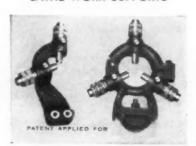
THIS tap holder features a parallel and angular float and a releasing clutch and pull out. It not only corrects for parallel and angular misalignment to assure accurately tapped holes, but it will not bind or freeze under tension or compression, and will float tap out of hole freely, maker states. The holder is made for use on all makes of turret lathes and automatics. Made in 2½" size to take taps from ½" to 1½" sizes. The shank is 1½" x 4". Empire Tool Co., 8774 Grinnell Ave., Detroit 13, Mich.

# TEMPERATURE CONTROL VALVE



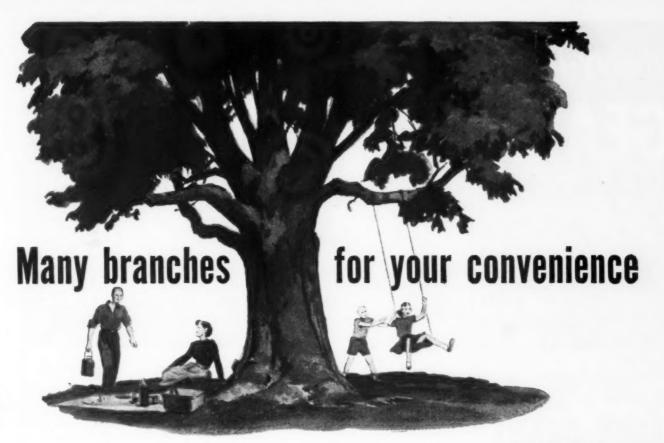
"CR" McKee automatic temperature control valve, for use on all types of combustion systems controlled by air, is said to give smooth, gradual high-low control action. All main castings are of aluminum. Motive power for the valve is supplied by the same air that is being regulated. Operating range can be set for any desired maximum or minimum of valve operation. Pressure range is from 2 oz. to 4 lbs. Maintenance costs are described as being remarkably low. Bulletin M-200 available. Eclipse Fuel Engineering Co., 716 So. Main, Rockford, Ill.

# LATHE WORK SUPPORTS



FEATURES of the Follower Rest and Center Rest for certain types of lathe work shown above are the wrenchless adjustment and locking of the jaws. Each jaw has a large knurled knob for adjust-

(Please turn to page 180)



... You get Fast, Efficient Service when you Call GENERAL
FOR INDUSTRIAL, LABORATORY and AGRICULTURAL CHEMICALS

# 26 Regional Offices—as Near to You as Your Telephone

ALBANY 2, NEW YORK Port of Albany Albany 5-8728

ATLANTA 3, GEORGIA 45 Edgewood Ave., \$. E. MAin 1278

BALTIMORE 30, MD. 2000 Race Street SOuth 1212

BIRMINGHAM 3, ALABAMA 2313 Morris Ave. Birmingham 4-3731

BOSTON, MASSACHUSETTS Wellington Station Medford 55, Mass. MYstic 6-3568



BRIDGEPORT 5, CONN. 524 Wordin Ave. BRidgeport 4-9419

BUFFALO 2, NEW YORK 1 West Genessee St. MAdison 4178

CHARLOTTE 1, N. C. 818 Tuckaseegee Road CHarlotte 3-0175

CHICAGO 32, ILLINOIS 3357 West 47th Place Virginia 7-3040

CLEVELAND 14, OHIO 850 Euclid Ave. CHerry 0574

> DENVER 9, COLORADO 1271 West Bayaud Ave. PEarl 2666

DETROIT, MICHEGAN 800 Hawks Ave. River Rouge 18, Mich. Vinewood 2-1500 HOUSTON 3, TEXAS 3909 Capitol Ave. CHarter 4-2675

LOS ANGELES 15, CAL. 1151 South Broadway Richmond 7-7251

MINNEAPOLIS 14, MINN. 129 6th Ave., S. E. GEneva 8681

NEW YORK 4, N. Y. 25 Broad St. Digby 4-4310

PHILADELPHIA 7, PA. 12 South 12th St. WAInut 2-1234

PITTSBURGH 19, PA. 439 7th Ave. ATlantic 3270

PORTLAND, OREGON COmmerce 9933 Vancouver, Wash. PROVIDENCE 1, R. I. 58 Weybosset St. DExter 1-7784

ST. LOUIS 1, MISSOURI 818 Olive Street CHestnut 3870

SAN FRANCISCO 4, CALIF. 235 Montgomery St. DOuglas 2-0904

SEATTLE 1, WASH. 1326 5th Ave. Elliot 5287

WENATCHEE, WASH. 3 Benton St. WEnatchee 1703

YAKIMA, WASH. YAkima 4712

In Wisconsin: GENERAL CHEMICAL COMPANY, INC. 205 South 16th St., Milwaukee 3 Mitchell 5-3516

# GENERAL CHEMICAL DIVISION

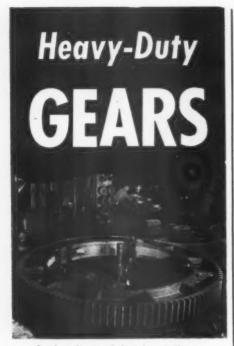
ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

nd he

dch st-

G



Cutting the teeth in a large diameter spur gear in the Simonds shop.

# LARGE GEARS

OF ALL TYPES

up to 12 ft. dia.

When you need large or heavyduty gears for new industrial equipment-for special machinery -for repairs or replacementscall on SIMONDS GEAR where they have been a specialty for more than 50 years. SIMONDS GEAR assures you of personalized attention to your specific requirements -faithful reproduction of your most exacting specifications-and faster service because SIMONDS' production is geared to specialized work. For all types of heavy-duty gears ranging to 145" dia. in materials including cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite-send your inquiry to SIMONDS GEAR.



(Continued from page 178)

ing the jaw position, and a thumb screw for locking. Double acting compound screw thread provides approximately 3/16" jjaw movement for each revolution of the adjusting knob. Quick adjustment with extreme precision is claimed for the supports. Available for current models of South Bend lathes. South Bend Lathe Works, South Bend 22. Ind.

### 16-OZ FIRE EXTINGUISHER



PORTABLE, pressurized fire extinguisher throws an 18-ft. stream of 90% carbon tetrachloride and 10% other chemicals when trigger is pulled. Can be used on gasoline, fuel oil, paper, grease and electrical fires. Fluid meets Underwriters Laboratories and U. S. Government Of-380 specifications. It is said to be hermetically sealed, and leakproof and to require no refilling or inspections. Wall bracket supplied with extinguisher. Bostwick Laboratories, Inc., Bridgeport 5, Conn.

## HAND OPERATED WINCH

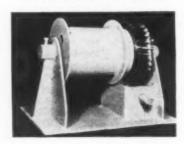


ILLUSTRATION shows new hand operated winch that is self locking and will hold a load in any position. The winch is of all welded steel construction. Bronze or cast iron worm gear with steel worm. It has a capacity of one ton and can be motorized. Atlas Industrial Corp., 849 39th Street, Brooklyn 32, N. Y.

# CENTRIFUGAL PUMP



MODEL H centrifugal pump is for those applications where moderate pressures and volumes are required from a (Please turn to page 182)



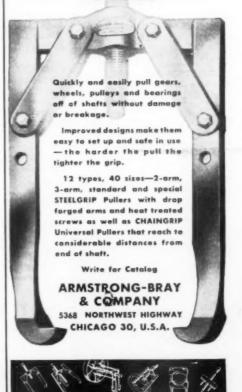
# ARMSTRONG-BRAY GEAR and WHEEL PULLERS

forged or stamped parts, and we will be

pleased to submit our estimate for pro-

ATLANTIC STEEL COMPANY

duction.

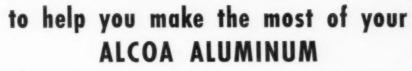


#### FREE BOOKLETS

#### FREE MOTION PICTURES







Sixty years' experience with aluminum—how to design, fabricate and finish products made of Alcoa Aluminum-is at your command, through your Alcoa distributor. Take advantage of the help he can give you! Ask his advice on any aluminum problem. ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Penna.

Your Alcoa distributor is a good man to know. You'll find him listed below:

Atlanta, Georgia

J. M. Tull Metal & Supply Co., Inc. Phone: WAlnut 3525

Baltimore, Maryland

. Whitehead Metal Products Co., Inc. Phone: LAfayette 2300

Boston (Cambridge), Massachusetts
• Whitehead Metal Products Co., Inc. Phone: TRewbridge 6-4680

**Buffalo**, New York

. Brace-Mueller-Huntley, Inc. Phone: Riverside 2620

. Whitehead Metal Products Co., Inc. Phone: CLeveland 1475

Charlotte, North Carolina

 Edgcomb Steel Company Phone: 4-9768

Chicago, Illinois

. Central Steel & Wire Company Phone: REpublic 7-3000

 Steel Sales Corporation Phone: Bishop 7-7700

Cincinnati, Ohio

Williams & Company Phone: CApitol 3000

Cleveland, Ohio • Williams & Con pany, Inc. Phone: UTah 1-5000

Columbus, Ohio

• Williams & Company, Inc. Phone: MAin 3291

Dallas, Texas
• Metal Goods Corporation
Phone: Dixon 4-3925

Detroit, Michigan

 Steel Sales Corporation Phone: TYler 6-3000

Houston, Texas

 Metal Goods Corporation Phone: BEacon 3-8881

Kansas City, North, Missouri Metal Goods Corporation Phone: NOrclay 3516

Los Angeles, California

 Ducommun Metals and Supply Co. Phone: Kimbali 0161

· Pacific Metals Company, Ltd. Phone: PRospect 8171

Newark, New Jersey

. Whitehead Metal Products Co., Inc. Phone: Blgelow 8-8500

New Orleans, Louisiana

 Metal Goods Corporation Phone: CAnal 7373

New York, New York

. Whitehead Metal Products Co., Inc. Phone: WAtkins 4-1500

Philadelphia, Pennsylvania

• Edgcomb Steel Company Phone: GArfield 3-6300

. Whitehead Metal Products Co., Inc. Phone: BAldwin 9-2323

Pittsburgh, Pennsylvania

• Williams & Company, Inc. Phone: CEdar 8600

Portland, Oregon

• Pacific Metal Company Phone: BRoadway 0695

ALCOA ALUMINUM

ITS ALLOYS

Rochester, New York

• Brace-Mueller-Huntley, Inc.
Phone: GLenwood 0962

San Francisco, California

 Pacific Metals Company, Ltd.
Phones: Mission 7-1104 ENterprise 1-0806

Seattle, Washington

 Pacific Metal Company Phone: MAin 6925

St. Louis, Missouri

Metal Goods Corporation
 Phone: GOodfellow 1234

Syracuse, New York

Brace-Mueller-Huntley, Inc.
Phones: SYracuse 73-3341 9-6621

Whitehead Metal Products Co., Inc.

Phone: SYracuse 5-4112

Toledo, Ohio
• Williams & Company, Inc. Phone: ADams 8101

Tulsa, Oklahoma

• Metal Goods Corporation Phone: 4-1175

### ALCOA ALUMINUM





## Your Best Buy in Bearing Bronze

When you buy Johnson UNIVERSAL Bronze you buy much more than metal. You make a wise investment in bearing performance and economical bearing life. You save considerable money too.

First, you have the widest range of sizes to choose from . . . over 350 solid and cored. Every bar is completely machined, eliminating all extra work and guaranteeing perfection all the way through. Every Johnson UNIVERSAL Bar is entirely usable from end-to-end.

When you cut the bar you are pleasantly surprised to note how easily it handles. Ordinary tools turn the metal with ease and with speed. There is no grit or sand inclusions to contend with.

When the finished bearing is installed, check up on its performance and life. Note how smooth, how quietly it operates. Note also, the exceptionally long bearing life . . . the elimination of frequent replacement.

Why not try a bar on your next job? Your local Johnson Bronze Distributor carries a complete stock for immediate delivery.

JOHNSON BRONZE CO. 450 S. MILL ST. • NEW CASTLE, PA.

#### Catalogue

It's NEW... listing and describing the most complete bearing service in the market and it's FREE.



(Continued from page 180)

unit running at 1725 rpm. Performance curve on the pump shows a shut-off pressure of 19 psi, 10 gpm at 15 psi, 15 gpm at 10 psi, and in excess of 20 gpm at free flow. It is constructed in either bronze or aluminum, with lifetime mechanical rotary seal. The inlet is ½" N.P.T. female and the outlet is ¾" N.P.T. male. Available with motors ranging from 1/6 hp to 1/3 hp. Eastern Industries, 296 Elm St., New Haven 6, Conn.

#### FIRE EXTINGUISHER



DRY chemical fire extinguisher shown above is claimed to have long range, long duration of discharge, complete discharge of the dry chemical contents, gas-tight all-internal expelling gas connections, built in safety disc, and light weight. The extinguisher is identified as No. 30 Alfco Dry Chemical. The dry chemical is non-toxic, non-corrosive, non-conductor of electricity, and will not freeze. American-LaFrance-Foamite Corp., Elmira, N. Y.

#### ONE-MACHINE SAW SHOP



THIS UNIT is termed a complete saw shop in one machine,—cut-off saw, miter saw, rip saw, tilting arbor saw, double miter saw, variety saw. It is known as the Model GW all purpose machine, and is especially designed for small shops. It features a 1 hp motor driving a 10" diameter saw blade. Using proper tool, it becomes a dado machine, a gaining machine, a grooving machine, a rabbetting machine, or a shaper. Catalog available. DeWalt, Inc., 201 Martha Ave., Lancaster, Pa.

#### You know you're right

with "G-E White"



Each step in the manufacture of General Electric White rigid conduit, from raw material to final inspection, is carefully controlled to bring you a uniform, high-quality product. Interior and exterior surfaces are smooth . . . threads are sharp and clean-cut. Finish is hot-dipped zinc, with an additional coating of baked-on Glyptal lacquer.

Always, when you think of conduit for protection from atmospheric corrosion, think of "G-E White." For further information, see your nearest General Electric Construction Materials distributor, or write to Section C14-370, Construction Materials Department, General Electric Company, \*Trade-mark Reg. U. S. Pat. Off. Bridgeport 2, Connecticut.

#### RACEWAYS ROUNDUP

with your

#### GENERAL ELECTRIC

**Construction Materials Distributor** 



If you're wonder-ing how to get raceway protection for wiring in cramped quarters, for machine tool or temporary wiring, General Elec-

tric flexible steel conduit is the answer. This conduit is strong, yet very flexible. It's quickly installed, and the zinc-coated strip steel is wound in a way that makes wire pulling easy.

Don't forget Gen-eral Electric EMT for those light jobs that don't require the heavy-duty pro-tection of rigid conduit. You'll like the



way lightweight EMT can be easily handled . . . easily bent . . . quickly installed with threadless fittings. This thin-wall, welded steel tubing has an exterior surface of electrogalvanized zinc and an interior of corrosionresisting enamel.



General Electric switch and outlet boxes are made in a variety of sizes. shapes, and depths for every purpose.

available either galvanized or with black-enamel finish. All cable and conduit boxes have improved knockouts, are easy to install, and have the approval of Underwriters' Laboratories, Inc.

On your next order, why not try the time-saving, "onestop, one-package" service that your General Electric distributor can supply?



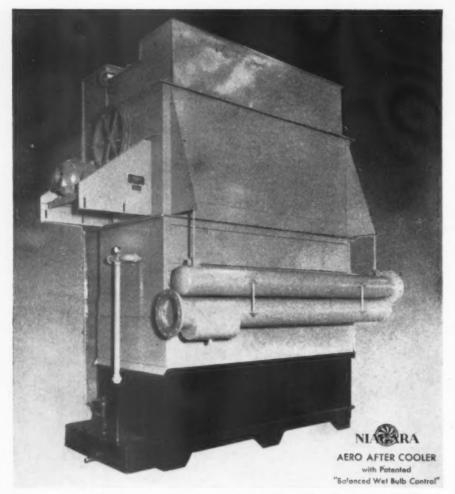
Because he carries the complete General Electric line, you can order every item you need from him. No need to run around getting part of your requirements in one place and part in another. It's the kind of service busy contractors need to help stretch scarce working hours.



GENERAL



ELECTRIC



#### How to PREVENT CONDENSATION in COMPRESSED AIR LINES

• Users of pneumatic tools and machinery spend thousands of dollars on repairs and suffer much interruption to production from the condensation of water in their air lines. In compressed gas systems and in processes where compressed air is blown directly on parts and materials in production, there is additional damage.

You can prevent these losses by installing a Niagara Aero After Cooler. It cools the compressed air or gas by evaporative cooling and removes the water before the air enters the receiver. This method brings the air to within a few degrees of the wet bulb temperature, making certain that your compressed air will always be colder than the atmosphere surrounding the lines in your plant, so that no further condensation can take place.

**Savings in cooling water pay for the installation.** Experience shows that the patented Niagara evaporative cooling method consumes less than 5% of the water required for cooling by conventional means. You save the cost of the water, the cost of pumping it, the cost of disposing of it. These extra savings soon pay for the Niagara Aero After Cooler.

Write for Bulletin No. 98

#### NIAGARA BLOWER COMPANY

Over 35 Years of Service in Industrial Air Engineering

Dept. PU 405 Lexington Ave. New York 17, N. Y.

District Engineers in Principal Cities



#### CHART INDICATES CORRUGATED SHIPPER SELECTION

A simplified classification indicator which tells at a glance the corrugated box recommended for safe packing and shipment of article in various weights and sizes has been prepared by The Hinde & Dauch Paper Company, Sandusky, Ohio, and is available to users of corrugated boxes upon request.

#### H. D BOXES

Standin Face Consequent Banco				Servent for			
1	1112		ARDIN .	1111	17.75	N.	
20	40	125	52	65	75	200	92
40	Ü	175	75	90	90	275	110
65	75	200	84	120	100	350	126
90	90	275	138	140	110	500	221
120	100	350	180	160	120	600	270

When closed, the indicator is only two inches wide and fits easily into the vest pocket of the user. When opened, it shows quickly and without additional checking, the proper corrugated shipping box for an article of given weight and size. It is equally simple to ascertain from the indicator the correct weight of the corrugated board facings. Conversely, the chart shows, too, whether the corrugated boxes now used in packing and shipping operations meet Consolidated Classification requirements. The indicator covers both single wall and double wall corrugated boxes.

#### 1 1 1 LIGHT-DUTY VIBRATING SCREEN

Line of light-duty vibrating screens known as the Mighty-Mite, is being put into production by the Screen Equipment Co., Inc., Buffalo 21, N. Y. They are particularly designed for small screening



The Mightly-Mite is designed for small screening jobs

jobs often performed by hand. Any job of separating materials to size, deducting or reclaiming may be done with the screens. Single and double deck models are available in 1-½' and 2' widths by 3', 4', 6' and 8' lengths. Triple deck models are made in similar sizes. Screen operation produces a positive eccentric action with maximum vibration amplitude of 3/16". Screens will take loads up to 15 tons per hour depending upon the type of material to be screened and the size of the wire cloth openings.

(Please turn to page 188)

#### Your Source of Supply for Better Taps

There are many sources of supply for standard taps . . . also varied degrees of quality in manufacture. The only way to determine your best source is by (1) reputation of the manufacturer in the trade, (2) your onthe-job performance of the taps you buy on the basis of tapping cost per hole.

However, if you run into troubles, it is far better practice to consult your manufacturer, stating the trouble in detail and requesting a solution. Hanson-Whitney engineers welcome such inquiries . . . in fact, we request them. We stand firmly back of Hanson "Finished Taps" of both Standard and Special make.

And as for "Specials," you'll find no *better* source of supply anywhere.

#### Measurement of Tapping Costs

Economy of tapping is measured only by the cost per tapped hole . . . not by the cost of the taps themselves.

In high speed tapping the Hanson-Whitney "Finished Taps" clearly demonstrate their superior value both for accuracy and economy. The accuracy with which they are made results in long tap life, minimum breakage, and perfect threads. It naturally follows that they are the most economical to use.

#### Explain Your Job in Detail . . . We'll Serve You Better

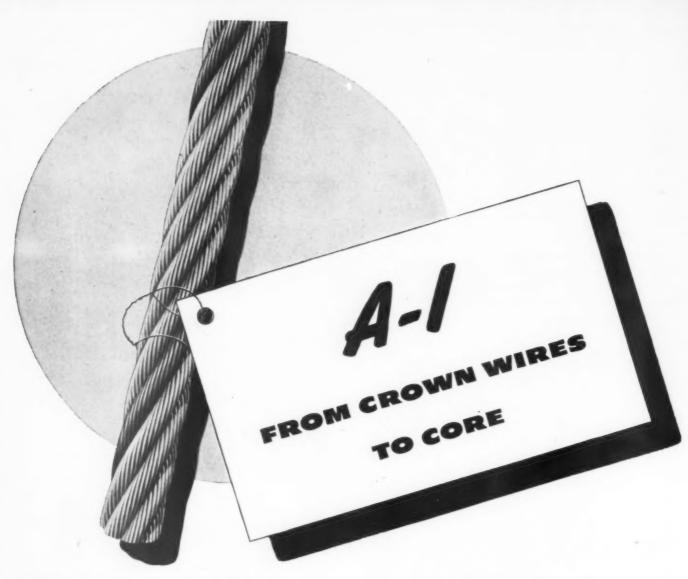
When ordering, specify grade of material to be tapped, depth of tapped hole, class of fit and whether through hole or bottoming. With full information we can give you correct hook or rake on cutting faces, number and style of flutes and proper chamfer. Thus you obtain the right tap for the specific operation . . . lower costs, quality threads.



The spiral flute tap, made with flutes and threads of the same hand, draws the chips from the hole. This prevents chip clogging and provides free flow of coolant.

HANSON-WHITNEY MACHINE CO. HARTFORD 1, CONN.
Division of Whitney-Hanson Industries, Inc.





Today's good idea: look at your wire rope, and if it needs replacing, order Purple Strand. That's Bethlehem's top-quality rope.

There's a world of real service in every foot of it.

There's strength. There's toughness—the kind that means longer life. There's expert workmanship from crown wires to core.

We're probably telling you things you already know. If not, check us by giving Purple Strand a try—on the toughest job you've got. You'll soon find out it's everything we say.

#### BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Export Distributor: Bethlehem Steel Export Corporation

### BETHLEHEM





#### PORTRAIT OF Relaxed WIRE ROPE

Here's a picture of Bethlehem wire rope with a wire and strand lifted out of place. The rope couldn't possibly have sprung apart by itself, even when cut, because it's been preformed. Bethelehem calls its preformed rope by the trade name Form-Set.

This is a type of rope in which each strand is shaped individually and permanently before being laid together with its neighbors. The preforming operation does away with internal stresses. Once preformed, the rope components cannot bush out or fly apart. The rope is relaxed. "It doesn't have a nerve in its body."

Being relaxed, it's placid . . . tractable . . . easy to handle. Resists kinking; makes rigging easier; stands up longer under bending fatigue.

All Bethlehem wire rope is obtainable with the Form-Set feature—all grades, sizes, and types. For full details, talk with the nearest Bethlehem district office or distributor.



"GERIATRICS" . . . treatment to avoid the effects of old age—needs to be applied to machines. Increased life expectancy for machines is of utmost importance to industry.

Machine "Geriatrics" is our business. Perfect Oil Seals, correctly applied, will keep machinery hale and hearty far beyond the usual allotted time.

Perfect Oil Seals keep lubricant in and also keep grit, dirt, and moisture out, preventing the accelerated wear which makes many bearings old before their time.

Perfect Oil Seals have been protecting machines against the ravages of old age for more than 20 years.

With 14 standard types and 1800 sizes, there is no difficulty in meeting your requirements.

5250

Engineering counsel is available on request,

OUR 71st YEAR OF INDUSTRIAL SERVICE

CHICAGO RAWHIDE MANUFACTURING CO.



1318 ELSTON AVENUE . CHICAGO 22, ILLINOIS

Manufactured and distributed in Conada by Super Oil Seal Mfg. Co., Ltd., Hamilton, Ont.

NEW YORK

MINNEAPOL

BETROIT

LOS ANGELES

CLEAFFURD

SYRACUS

PEGRIA

# Now! Magnifications as high as 10,000 TO 1\*



#### \*with the Merz "Vigilant" New-Matic

Here, now, is the one and only air-activated unit—totally unaffected by surface variations—with magnifications as high as electronic gages. It's the Merz "Vigilant" New-Matic Measuring Machine, with magnification up to 10,000 to 1, with a range of .0003. Also available with magnification of 5,000 to 1, with a range of .0006. Gives you the highest precision available—for the price of an air gage: Operates on the proved Merz principle of "balanced air." Has the additional advantage of a new adjustment that determines, independently, spread as well as zero positioning. Furnished with Merz' exclusive Sapphire or Diamond button spindle. Conventional jet-type spindle optional. Ask for a demonstration—in your own plant!

MERZ ENGINEERING COMPANY . INDIANAPOLIS, INDIANA



NEW-MATIC MEASURING MACHINES — NEW-TRONIC COMPARATORS AND SORTING MACHINES — STANDARD A. G. D. AND SPECIAL GAGES — TOOLS — SPECIAL MACHINERY — EXPERIMENTAL PROJECTS

#### COMBINATION CORRUGATED AND FOLDING CARTON

Illustration shows a combination of corrugated and folding carton developed by the Robert Gair Company, for Industrias Pampero C.A. of Caracas, Venezuela, for packaging a line of liquors.



The carton, which is printed in four colors, contains a glass decanter, as well as a glass stopper, which is held separately from the decanter by a special insert. For shipment, a cork is inserted in the decanter in place of the stopper. The style of the carton is a two-piece partial telescope with corrugated walls and full overlapping sides and ends.

#### SELF-CONTAINED HANDSIZE HEATING TORCH

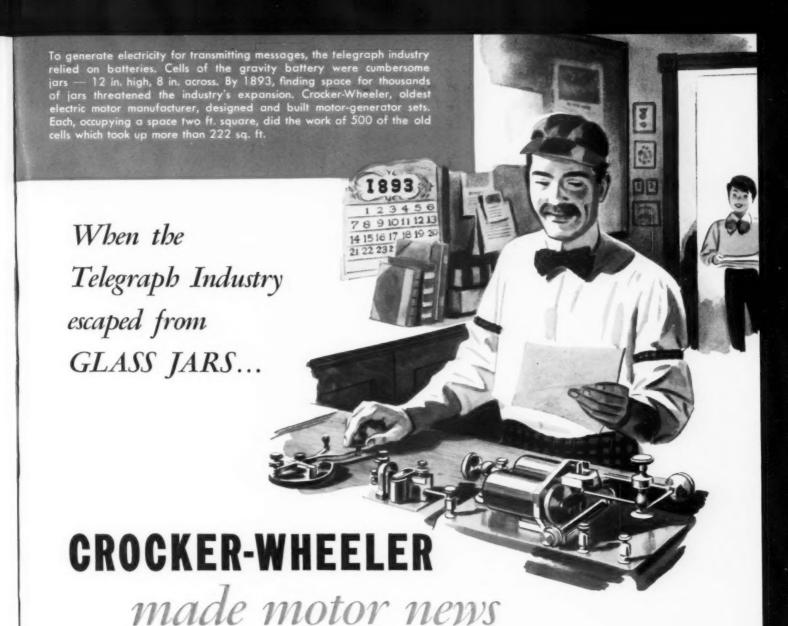
A self-contained, handsize heating torch, which burns for eight hours with a continuous blue flame at a temperature of 2800 deg. Fah., is being marketed by Sully Engineering Limited, 9304 Santa Monica Blvd., Beverly Hills, Calif. The torch is designed to give a maximum



The Crown torch is designed for all soldering and heating operations.

amount of efficiency on a small gas supply. It burns butane or propane gas, and while it operates at only 90 to 120 psi, maker states that the 16 gauge wall holds over 2,000 psi. The torch is further protected by a fuseable plug which melts out at 212 deg. to minimize hazard should it be subjected to fire. Maker states that the torch has passed major safety requirements. The unit weighs 2½ pounds, and the specially designed tip and valve combination eliminates the need for added tips. It is 12 in. long and 2¼ in diameter.

(Please turn to page 192)



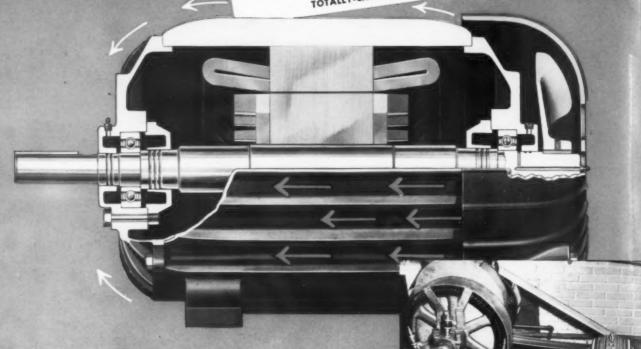
TODAY, 55 years and over a million motors later, Crocker-Wheeler no longer concentrates on the design and manufacture of special motors exclusively. But the pioneering spirit and engineering skill of Crocker-Wheeler that persuaded industry to adopt electricity half a century ago are still very much alive—in the performance of C-W standard motors today.

Past and present (yes, and the future) are inseparably fused at Crocker-Wheeler. A high percentage of the skilled workers who helped C-W make motor news through the years are still on the job, bringing to motor problems

of modern industry a rare background of knowledge and engineering experience.

You'll understand what we mean (if you don't already know) as new, more efficient standard motors, developed by Crocker-Wheeler, are introduced in 1949. You can sense it just by talking to Crocker-Wheeler when you have a difficult motor problem. Here, you will say, is a master of the art of motor-makingbut more than that, the kind of organization with which you would like to do business. Crocker-Wheeler Electric Manufacturing Company, Ampere 3, N. J.

CROCKER-WHEELER Sealedpower TOTALLY-ENCLOSED ... FAN-COOLED



## Saves 80% of Maintenance Costs

Sealedpower Motor driving a vertical triplex

You can make maintenance savings of 80% and more with Crocker-Wheeler Sealedpower Motors. The secret? C-W dollar-saving design. No other totally-enclosed, fan-cooled motor has exterior cooling, with the fan-driven airstream blowing over a finned frame, carrying dust and fumes outside and away. (The outside fins that identify a Sealedpower Motor provide over 150% more cooling surface.)

But that's not all - this motor keeps cooler longer because it keeps cleaner. There's no place for lint or dirt to collect . . . nothing to hold heat in. Even on the really dirty jobs, a Sealedpower Motor will keep production going many times longer than "ventilating passage" motors, without a shutdown for cleaning.

For years of cool, clean operation and low maintenance cost, specify Sealedpower Motors. They're stock motors made for the toughest service. In new ratings from 3 to 60 hp.



Crocker-Wheeler Electric Manufacturing Company, Ampere 3, N. J. Division of The Joshua Hendy Corp., Branch Offices: Boston, Buffalo, Chicago, Cincinnati, Cleveland, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, San Francisco, Washington, D. C. Representatives in principal cities.

SEND FOR BOOKLET, "It's Different — it's a Dollar-Saver." Tells why the Sealedpower Motor will save money for you.

#### WHATEVER YOUR MOTOR REQUIREMENTS - CALL ON CROCKER-WHEELER

If Crocker-Wheeler builds it, it's a better built machine.



Horizontal and Vertical Protected-Type Induction Motors







Large D-C Motors and Generators





CROCKE

ELECTRIC MANUFACTURING COMPANY, AMPERE 3, N. J.

Division of Joshua Hendy Corporatio

## ARTICLES of FAITH for Industry & Business

"BELIEVE that a business must be run at an adequate profit and must hold its own in fair competition with other businesses.

"... within my sphere I will do my best to help keep my business prosperous and strong.

"I BELIEVE that business must serve employees, stockholders, consumers, and government and that management must keep the interests of all these elements in balance.

"... to the extent of my authority I will try to preserve this balance.

"I BELIEVE that management's operating goals are continuously improved productivity and growth, in order to provide jobs, reward investors, attract capital, and provide more and better goods and services at lower cost.

"...in any capacity in which I find myself I will work toward those goals.

"I BELIEVE further that the greatest assets of a business are its human assets and that the improvement of their value is both a matter of material advantage and moral obligation; I believe, therefore, that employees must be treated as honorable individuals, justly rewarded, encouraged in their progress, fully informed, and properly assigned, and that their lives and work must be given meaning and dignity, on and off the job.

"... if I have the supervision of so much as one other person I will strive to honor these principles in practice.

"I BELIEVE that a reputation for integrity is another priceless asset of any business and that management must deal fairly with customers, competitors, and vendors, advertise truthfully,

fulfill its commitments, co-operate with other managements in the betterment of business as a whole, and oppose any artificial restriction that may limit production, fix prices, or restrain trade.

"... in my daily work I will try to deserve, and make my business deserve, a reputation for integrity.

"I BELIEVE that the future of the American economic system depends on the confidence, good will, and understanding of the people, and that business leadership must make itself a responsible part of the human community by participating in worthy activities, locally and nationally.

"... as a representative of business and as an individual I will identify my business and myself with the welfare of people.

"I BELIEVE that whenever business has earned a hearing, it has not only a right but a duty to ask for public confidence, and that it must speak freely, give information gladly, and answer the attacks of those who seek to undermine American freedom under democratic capitalism.

"... I will speak out in behalf of my business and the system which it represents.

"I BELIEVE, finally, that business leadership is nothing less than a public trust, that it must offer a message of courage and hope to all people, and that it can help an economically strong America to lead other nations to lasting prosperity, freedom, and peace.

"... I will work not only for the advancement of myself, my family, and my country, but for liberty and democracy for America and for the world — now and in the years to come."

WE BELIEVE, here at Bristol Brass, that this is the most enlightened Code of Practice ever expressed by, or for, American industry and business. It comes from the mind and pen of Mr. Clarence Francis, Chairman of the Board, General Foods, Inc. And we regard it as a privilege . . . as well as a public service . . . to devote this page to the wider dissemination of these principles.

#### The BRISTOL BRASS CORPORATION

Makers of Brass, since 1850, in Bristol, Connecticut



#### The SYMBOL of QUALITY for 62 YEARS

WASHERS . . . Standard and Special, Every Type, Material, Purpose, Finish . . . STAMPINGS of every Description . . . Blanking, Forming, Drawing, Extruding.

Your most dependable source of supply — the world's largest manufacturer of Washers, serving Industry since 1887. Over 22,000 sets of Dies. Submit your blueprints and quantity requirements for estimates.





We have the designing engineers viewpoint on the importance of strict adherence to blueprints and specifications. The same personal care is given to the production of gears and gear assemblies in our plant that the designer gives to the engineering of the job.

Specifications are studied by our engineers to determine the most efficient economical manufacturing procedure. Sometimes modifications are suggested to achieve greater production economy, but when a contract is accepted the specifications are strictly followed in production.

\* A qualified sales engineer representing Amgears, Inc., is located near you for personal service \* We invite correspondence on your particular gear problems.

\* We specialize . . . in all types of gears and gear assemblies for original equipment.

Gears for construction equip-

Automotive and tractor gears. Fine pitch instrument gears.

Gears for farm implements.

Special gears for high speed operation, with shaved or ground teeth. Miter and bevel gears for mining machinery. Spur or helical tooth pump

gears. Aircraft engine and airframe

AMGEARS, INC. 4633 WEST 65TH STREET, CHICAGO 38, ILLINOIS PHONE - PORTSMOUTH 7-2100



#### "WIRE ROPE IS A MACHINE" NEW J & L BOOKLET

Jones & Laughlin Steel Corporation, Pittsburgh 30, Pa., announce the availability of a new pocket-sized handbook titled "Wire Rope is a Machine." Interestingly illustrated it provides an easily understood explanation of how wire rope works, how it should be operated, and how to select and order correct wire rope construction for long service life.



Wire Rope Sales Manager D. J. Henecker reviews first press run copy of new monual.

Included are tables of weights and strengths and information on rope ends in section on standard fittings, slings, and splicing. Illustrations show rope applications on shovels, dragline excavators, cranes, grab buckets, pavers, bulldozers, drilling rigs, and other lines of industrial and marine equipment.

#### NEW LEBANON STEEL PLANT FOR SECRET PROCESS CASTING

Completion of a \$500,000 plant expansion program for Lebanon Steel Foundry, Lebanon, Pa., doubles the company's high alloy steel casting facilities. The new plant addition and unique equipment installations are especially designed for the production of super-alloy castings under secret processes developed by Firth-Vickers Stainless Steels, Ltd. of Sheffield, England. The British-developed process of centrifugal casting in permanent molds, known as Centri-Die castings is claimed to be one of the most important improvements in a generation of alloy-steel foundry progress. The process is specifically adapted to the production of high melting-point alloys, and the technique is also applicable to the production of alloyed materials but now commercially available - particularly in the direction of tubular or cylindrical structures which are difficult or impossible to forge or cast by any other method.

The new equipment includes five "spinning machines" specially developed for the process. These are designed to cover all phases of varied centrifugal casting requirement arising in diversified foundry practice. One of the units has the capacity to spin a combined load of 10,000 pounds of molten metal and die at a maximum speed of 1,200 revolutions per

minute.

(Please turn to page 196)





KHP precision Spring Steels are available in both annealed and tempered grades, in a carbon range of .50 to 1.00. Choice of finishes in blue, straw, and mirror bright. Thicknesses from .0015 to .125 in tempered, and from .005 to .1875 in annealed. Also Feeler Gauge steels in all thicknesses. To assist you in the most economical application of KHP Spring Steels, the cooperation of our metallurgical department is freely at your service.

KHP PRODUCTS ARE: Cold rolled and hot rolled strip—shim—sheet steels • Annealed spring steels • Tempered feeler gauge steel • Cold finished bars • Drill rod • Electrical sheets • Precision tubing—cold drawn seamless—welded—stainless and alloy tubing • Aluminum strip and sheets • Extruded aluminum and magnesium tubing—shapes—mouldings • Rolled magnesium plates • KHP SERVICES: Edge rolling • Slitting • Square shearing • Flattening, straightening, cutting.



#### KORHUMEL . HEFFRON & PREISS STEEL CO.

2418 Oakton Street • Evanston, Illinois • AMbassador 2-6700 Rockford Phone Enterprise 1266 • Teletype Evanston 1675

WAREHOUSES: MINNEAPOLIS - MILWAUKEE - MT. VERNON, N.Y. - SALES OFFICES: DETROIT - ST. LOUIS - LOS ANGELES

# MARSH GAUGES

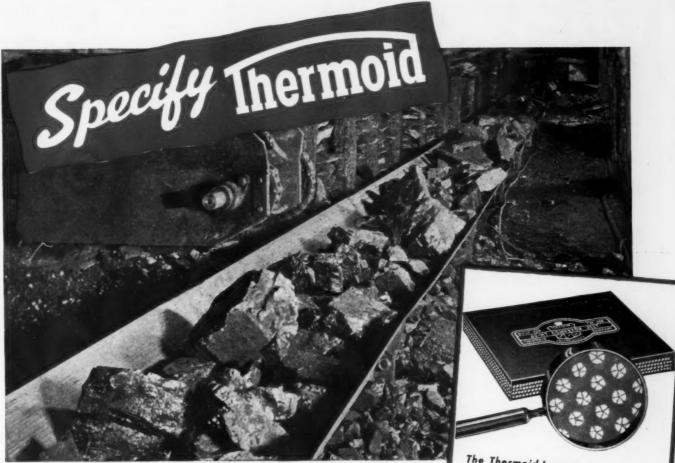
Under the grind of daily service Marsh Gauges stand out as the kind that maintain their accuracy.

JUST OFF THE PRESS New, fact-filled catalog covering Marsh instruments. Ask for your copy.



JAS. P. MARSH CORPORATION DEPT. G, SKOKIE, ILLINOIS

Jas. P. Marsh products include a full line and range of gauges in pressure, compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. Ask for literature.



#### **Thermoid Impregnation Process Assures Longer Conveyor Belt Life**

Thermoid Conveyor Belts are Built for the Job!

For over 68 years, Thermoid has worked with its distributors and industry to develop rubber products to meet the requirements of every industry. The resulta complete line of Thermoid conveyor and elevator belts for every major industrial application.

Your nearest Thermoid distributor can service your requirements . . . or if you prefer, write us of your problem and we will furnish full details.

It will pay you to Specify Thermoid!

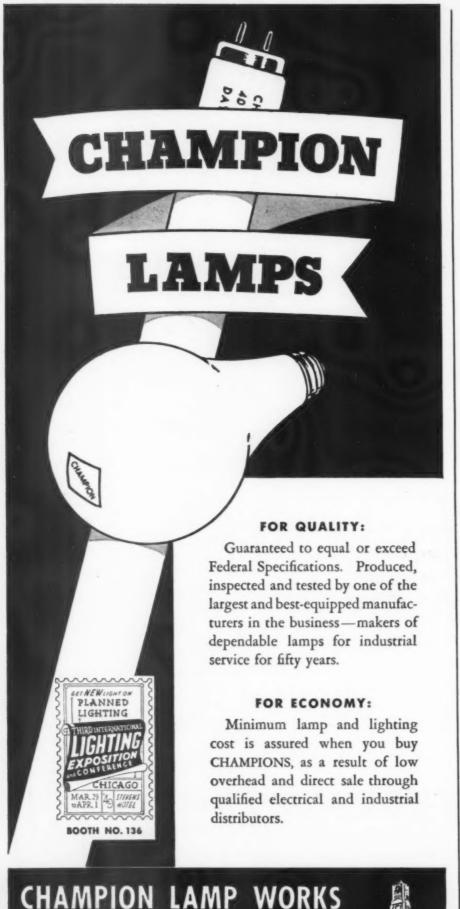
Thermoid Quality Products: Transmission Belting • F.H.P. and Multiple V-Belts . Conveyor Belting . Elevator Belting . Wrapped and Molded Hose · Molded Products · Industrial Brake Linings and Friction Materials.

#### The Thermoid Impregnation Process

insures a deeper penetration of rubber between the threads of the yarn, which encases each individual strand with protective rubber. The rubber acts as a sheath between the strands and prevents the destructive abrasion action as the product is flexed in use. To obtain the required rubber penetration, the twist of the yarn must be to exact specifications. With the yarn twisted too tightly, proper penetration of the rubber compound is impossible. This condition produces abrasion, causing premature failure. On the other hand, if the yarn is twisted too loosely, the product lacks tensile strength. Thermoid has discovered the optimum twist of the yarn which assures maximum rubber penetration and greatest strength. The development of Thermoid Impregnation Process is another step forward in Thermoid's planned program of product improvement, assuring maximum service and lower operating costs to industry through the use of Thermoid Industrial Rubber Products.



Main Offices and Factory . Trenton, N. J., U. S. A. Western Offices and Factory . Nephi, Utah, U.S.A. Industrial Rubber Products • Friction Materials • Oil Field Products



#### YALE ANNOUNCES GASOLINE POWERED INDUSTRIAL TRUCKS

"Lift King" is the name of new gas truck line announced by the Yale and Towne Manufacturing Co., Philadelphia Division, Philadelphia Pa., which features fluid drive, automatic controls, hydraulic piston life (in two stages by means of a ram within a ram), and low mast heights with high free lifts.

The Lift King gas truck is equipped with standard Chyrsler fluid drive, enabling the operator to progress from slow to fast speeds and vice versa without operating clutch or gearshift levers. Loading, clamping, rotating and fork adjusting accessories which characterize modern truck adaptations to special handling functions operate hydraulically.



"Lift King" is equipped with fluid drive.

The hydraulic lift is constructed to permit a full 66" load-lift before the telescopic mechanism begins to rise. This model has a maximum lifting height of 130", can handle up to 6,000 lb. loads and has a collapsed height of 53". Another model is available with a free lift of 51", a maximum lifting height of 100", and collapsed height of 68". Lifting speed of the Lift King Gas truck line is 30 feet per minute at full load. Printed matter available.

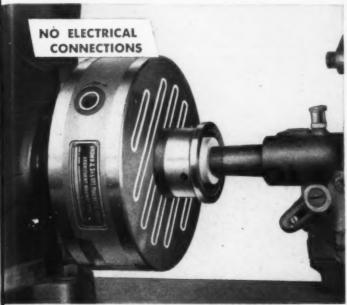
#### BULLETIN EXPLAINS CENTRI-DIE CENTRIFUGAL CASTING

Detailed information on the Centri-Die process of centrifugal casting in permanent molds is given comprehensive treatment in a new bulletin, Centri-Die Castings, published by Lebanon Steel Foundry, Lebanon, Pa. Perfected in Britain during the wartime, the process is described as one of the most important recent advances in the casting of carbon, special alloy and stainless alloy steels for severe heat-resistant and corrosion-resistant service. Listed as advantages inherent in the process are: (1) higher quality castings of greater density and decidedly enhanced physical properties; (2) readily achieved production of assorted parts and complex structural shapes which cannot be cast by static methods; uniformity of casting strength; and (4) use of alloys which are difficult or impossible to forge. Copies of the booklet are available on request.

(Please turn to page 198)

Lynn, Massachusetts

## Powerful Permanent Magnet Chucks





#### **ECONOMY FEATURES**

NO INSTALLATION COSTS
NO OPERATING COSTS
PORTABLE • ADAPTABLE
SAFE • LONG-LIFE
SIMPLE TO USE

## that simplify layout work, testing, inspecting, grinding and light machine operations

Wherever these Brown & Sharpe permanent magnet chucks are in use, time-consuming holding jobs are made easy — economical. By a simple turn of a lever, work is held securely — another turn releases work instantly. The amount of holding power may be varied to permit accurate positioning of work.

With these chucks, no jigs or fixtures are needed. No clamps. No vises. No risk of distorting work through uneven pressure. The chucks are portable... instantly usable... and will hold work as long as desired without damage to work or chuck because they do not heat. Used for wet or dry grinding.

#### WIDE RANGE OF TYPES AND SIZES

Brown & Sharpe Permanent Magnet Chucks are available as follows:

RECTANGULAR MODELS, 8 sizes, to 12%" x 36". ROTARY MODELS, 3 sizes — diameters — 5", 7", 9".

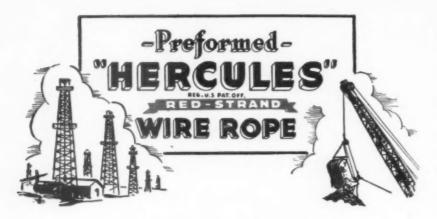
Also available . . . auxiliary top plates, magnetic chuck parallels, magnetic blocks with V or plain face and other useful holding aids.

For sale only in the United States of America and its Territories. Write for Catalog describing operating principles and specifications. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

We urge buying through the Distributor

BROWN & SHARPE







## Easy to Handle . . . Safe and Economical to Use



6 x 19 Seale Wire Rope Core



Style G-Flattened Strand Fiber Core



6 x 37 Filler Wire



6 x 41

For over 60 years "HERCULES" (Red-Strand)
Wire Rope has been proving its worth by the
accurate yardstick of actual performance. Now
in the Preformed type, a plus value has been
added. As internal stresses are largely eliminated, the rope is less apt to kink it is easier
to handle it spools better it lasts longer.

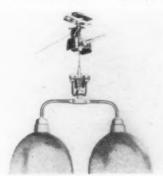
Another and ever important factor in determining wire rope life is the use of the right rope for the work to be done. To meet this situation, Preformed "HERCULES" (Red-Strand) Wire Rope is made in a wide range of both Round Strand and Flattened Strand constructions. Our Engineering Department will be glad to help you make the right selection.

We Invite Your Inquiries

#### LOWERING & DISCONNECTING HANGER Designed for use with twin or triple

MERCURY-INCANDESCENT

Designed for use with twin or triple unit combinations of mercury and incandescent luminaires, as well as for similar straight incandescent units, disconnecting and lowering hanger units being marketed by the Thompson Electric Company, Clereland, Ohio, facilitate maintenance and repair and permit ready changes of bulb sizes, color lenses, etc. to meet varying requirements. The hanger can be used in any combination of circuits within its rated capacity, such



Hanger facilitates maintenance and repair.

as two circuit three-wire leaving one pole blank, two circuits of two wires each, or three circuits of four wires with a common return. The arrangement permits individual control of each circuit, and a triple unit can be wired in various lighting combinations for temporary or permanent needs. The system is known as the Thompson Series 300. In industrial applications where mercury lighting is used because of its intensity and low cost, the series 300 permits the use of incandescent lighting to soften the mercury lighting and to provide instantaneous light when the switch is closed. Electrical hazards are eliminated because lowered lighting fixtures are "dead".

#### THE CURRENT LEAD SITUATION

In the course of a recent address on the "Current Lead Situation", Robert Lindley Ziegfeld, secretary, Lead Industries Association, New York, said, "On the supply side of the picture I look for continued gradually increasing mine production providing the labor continues to improve and there is relative freedom from strikes. Also, the huge supply of scrap that has been built up by the tremendous lead consumption of recent years, particularly in storage batteries, indicates large secondary production, although perhaps not equalling the last two years.

"There is every reason to expect imports to continue heavy. The suspension of the tariff on lead which passed Congress last year, expires June 30, but unless there is some drastic change in the lead situation it appears likely to be extended for another year. No permanent change in the lead tariff is contemplated as it is not listed for consideration in any

(Please turn to page 202)

### A. LESCHEN & SONS ROPE CO. WIRE ROPE MAKERS ESTABLISHED 1857

5909 KENNERLY AVE.

NEW YORK 6 • CHICAGO 7 LOS ANGELES 21 • PORTLAND 9



ST. LOUIS 12, MO.

HOUSTON 3 • DENVER 2 SAN FRANCISCO 7 • SEATTLE 9



Out-of-round means out-of-stock

This studied revolution of a Federal Ball Bearing is the forerunner of many thousands at high-speed every minute of its long operating life. The O.D. high and low spots, which mean taper and out-of-round, are intercepted at this point of Federal's inspection control. I.D. grinding, too, is held to such critical account to assure that bores are cylindrical, not bellmouthed, tapered or out-of-round.

Proper operating fit is the end result...correct running clearances maintained between the housing and shaft.

Taking the "measure" of a bearing to Federal's rigid standards involves over 100 individual production, inspection and cleaning operations—with *every fourth operator*  an inspector. Out of this system of check and re-check, fifty years in the developing, Federal Bearings are equipped to deliver friction-free performance on any assignment.

Your application may benefit from a Federal Ball Bearing installation. Our representative in your vicinity will gladly talk it over with you. Write for catalog "K." It describes the complete line of Federal Ball Bearings.

THE FEDERAL BEARINGS CO., INC. . POUGHKEEPSIE, NEW YORK

Makers of Fine Ball Bearings

2640 Book Tower, Detroit 26, Michigan • 8 S. Michigan Ave., Chicago 3, III.
• 402 Swetland Building, Cleveland 15, Ohio



#### FEDERAL BALL BEARINGS

ONE OF AMERICA'S LEADING BALL BEARING MANUFACTURERS

### Who said it costs more t



#### COMPARISON AND

Cold Rolled Steel as against Stainless Steel

#### COLD ROLLED STEEL

Basic Cost of Tools	\$.0152
Experienced life of tools plus average cost of maintaining dies, pro-rated basis.	
Punch Press Operations	\$.0180
Preparation for Chrome	\$.0224
Cost of Chrome Plating	\$.1331
Plating Scrap  Material scrapped because of prohibitive cost of stripping and re-chroming.	\$.0140
Inspection	\$.0060
Assembly line hold-ups	\$.0230
Finished units rejected or returned	\$.0480
Cost of material .025" Stock	\$.0121
Total	\$.2918



### to use Stainless Steel?

POLISHING

\$.0060

ANALYSIS OF COSTS

Inspection

as experienced by Dart Mfg. Co., Mason, Mich.

#### STAINLESS STEEL

Cost of Material .020" Stock ......\$.0584

Percentage Reduction in Cost 42.7%

THE "Metro-Meter" is a little device you'll soon be seeing a lot more of. It's a dial-reading steel rule with built-in scribe that men just naturally "take to" because it's practical, obviously useful, and, encased in Stainless Steel, is

It's the case we want to talk to you about. Originally it was made of cold rolled carbon steel, chrome plated. The steel, itself, was inexpensive. But by the time it was prepared for plating, and plated—after the costs for rejections and returns due to over-plating, under-

permanently good looking.

plating, chipping and peeling were added—each case cost a little over 29 cents.

By using lustrous satin-finish Stainless Steel in place of cold rolled carbon steel, however, all plating costs as well as rejections and returns were eliminated. Even though the initial cost of the Stainless Steel used was about five times that of the carbon steel formerly used, the final finished cost in Stainless was exactly 16.7 cents per case—a saving of almost 12½ cents each, which means a 42.7% reduction in cost.

What is more, with the magic word "Stainless" now stamped on the case, an almost irresistible plus has been added. Sales for the "Metro-Meter" which formerly had been good, immediately became

considerably better. Thus, Stainless has done here what it has done for many other products — improved appearance, increased durability and reduced sales resistance. And in this instance, it has actually reduced costs as well. In short, a product made of Stainless Steel does not necessarily cost more—it only looks as though it did.

We would be glad to have the opportunity to show you where U·S·S Stainless Steel can be applied to improve your product — to increase its desirability — and, more often than you may expect, to reduce its cost as well.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO - NATIONAL TUBE COMPANY, PITTSBURGH
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



#### U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS
PIPE · TUBES · WIRE · SPECIAL SECTIONS

UNITED STATES STEEL

### Blue Devil SOCKET SCREW PRODUCTS

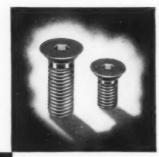


#### Socket Cap Screws Sturdy, cold formed

head — continuous fibre structure.

Flat Head Socket Cap Screws

New flush type socket cap screws — fit standard countersink.



#### Socket Set Screws

New precisionground threads on "Blue Devil" socket set screws assure finest, super-smooth finish. Safer because they're recessed—especially when used on collars, hubs, pulleys.



#### Set Screw Point Styles

- Cup Point
- Oval Point
- Flat Point
- Cone Point

• Half Dog Point Full Dog Point available on special order



Socket Pipe Plugs Safer and stronger than common malleable iron pipe plugs.

Heads don't protrude. Made of high

grade alloy steel. Pre-

cision-cut threads

provide an excellent

seal.

#### Socket Stripper Bolts

—also used for cam motions, link attachments, and other applications which require a long-wearing stud.

Socket Screw Keys In all sizes—short or long arm series.



WRITE TODAY



Bladd

FOR NEW CATALOG

Blue Devil

NEW 1949 catalog of "Blue Devil" socket screw products—lists prices, styles and sizes. Well illustrated, thumb indexed.

SAFETY SOCKET SCREW COMPANY

4455 N. KNOX AVENUE

11 Park Place

CHICAGO 30, ILLINOIS

New York 7, N. Y.

#### (Continued from page 198)

of the reciprocal trade agreement negotiations that have been announced.

"Producers of course only have small stocks of lead, so small that little or none can be drawn from them this year. Also manufacturers' inventories of lead are low."

He said that the principal lead consuming industries include storage batteries, cable, construction, petroleum and paint, in that order. These now account for nearly three-quarters of all lead consumption. A sixth important buyer of lead is the Government.

The Government's plans for stockpiling and rearmament have an important bearing on lead, he continued. "As you know, 70,000 tons of lead are going into the military stockpile during the current fiscal year ending June 30 next. So far as we know the Government would like to have a lot more in its stockpile than that. My personal opinion is that stockpile requirements for the next fiscal year will be at least as large as they were this year. possibly larger if the lead supply and demand picture permits. The rearmament program will doubtless have some effect on the demand for lead but we must remember that lead does not go directly into military applications to the same extent as some other metals."

#### 1 1 1

#### "LEVA-DOCK" SIMPLIFIES TRUCK LOADING AND UNLOADING

A new hydraulic device named the "Leva-Dock", product of the Rotary Lift Company, 1054 Kansas Street, Memphis, Tenn., specialists in hydraulic elevating devices, makes it possible to load directly into or unload from trucks or trailers without the use of steel plates plates, bridge ramps, or other methods.



The truck end of the Leva-Dock is same height as truck floor level.

The Leva-Dock is a hinged platform supported by a hydraulic jack. When the truck or trailer is backed into position, the Leva-Dock platform is lowered until its heavy supporting arms rest on the truck or trailer floor. The gap between the Leva-Dock and the vehicle is bridged by a steel throw-over bridge. The hydraulic system is then released so that the front end of the platform is free to travel up or down with the truck bed as truck springs are relieved or compressed during loading and unloading. The device eliminates handling problems incident to variations in truck bed heights.

(Please turn to page 206)



### NEW! SUPER-FLEXIBLE! SAFE! AMAZING WIRE BRAID STEAM HOSE

Here's the armored steam hose you've been looking for! It's dependably rugged, and it satisfies the most rigid safety requirements. That's because BWH technologists have spared neither time nor effort in making Concord #10 Steam Hose the best hose of its kind we've ever produced. Here are 6 reasons why this hose will serve you better:

- The heart of the hose is the same dependably strong rubber tube that has won fame for extra service in BWH BULL DOG Steam Hose.
- 2. It's muscled with braids of high-tensile steel wire, resistant to heat and high pressure.

- An open braid of asbestos next to outer wire braid assures perfect cover adhesion.
- An entirely new method of static control is the crossed wire braiding in the asbestos section — every length tested.
- The cover is extra tough to resist abrasion, specially designed to resist high temperatures.
- Because no cotton duck is used, Concord #10 gives longer service on constant pressure steams.

This new hose is extra flexible, too. In fact, Concord #10 is the most modern hose you're likely to find for refineries, core drilling and other high pressure jobs.

From a safety standpoint, Concord #10 rates tops. "Flash" explosions can't happen, because little whispers of steam seep out indicating replacement is necessary. There can't be any sudden bursts to cause injuries to workmen or result in expensive shut-downs.

When you need steam hose that's lightweight, flexible, rugged and SAFE, think of BWH Concord #10. It's your best bet . . . the safest we've ever made!

HAVE YOU A JOB WHERE STAMINA COUNTS?
Bring us your toughest problems. We're specialists in solving them. For all industrial rubber needs, look to BWH products for dependable ruggedness, to BWH distributors for dependable service.

**Another Quality Product of** 

#### BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS., U.S.A. P.O. BOX 1071, BOSTON 3, MASS., U.S.A.

• up to 1/3 less space ...

• improved windings...

o improved plate steel



## Westinghouse

# and NON... Lubricated for LIFE!

Now... for the first time... you can install electric motors, or motor-driven machines... and forget motor lubrication for life!

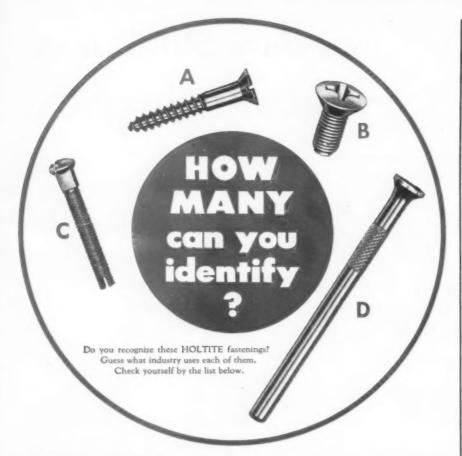
Westinghouse Life-Line . . . industry's amazing new, all-steel motor . . . now completely eliminates the biggest element in the maintenance of motors and motor-driven equipment . . . the need for periodic motor lubrication.

Eliminated, too, are two of the most frequent causes of motor burnouts and lost time . . . overgreasing and undergreasing of motors. Life-Line motors are equipped with sealed bearings, pre-lubricated for life with a morethan-ample supply of specially-treated lubricant.

Correct lubrication and long life are assured ... machine outages are reduced... motor drive problems are simplified, since motors can be located without need for constant accessibility.

Added to Life-Line's outstanding advantages of plate-steel protection, improved windings and more compact size, lifetime lubrication is one more important reason for starting to convert, today, to Life-Line power. Standard ratings are available from stock—others on short delivery schedules. Ask your Westinghouse representative for price and delivery on your requirements, or write P. O. Box 868, Pittsburgh 30, Pennsylvania.





**CONTINENTAL** makes them all and thousands more

Of all the 400,000 varieties of fastenings that literally hold our industries together, Continental makes a large proportion marketed under the famous HOLTITE trade name. Most of them are standard - screws, nuts, and bolts for every use in every industry. Others like the well-known HOLTITE-Sems and HOLTITE-Phillips screws are patented specialties and the famous HOLTITE-Thredlock, Locktite and Tap screws were first designed and produced by Continental. Sometimes a fastening engineered by HOLTITE for one industry finds an unexpected use in another. Often a HOLTITE Engineered fastening will replace several parts that a manufacturer is using. Why not discuss your fastening requirements with a Continental Sales-Engineer. He will focus on your requirements all the broad industrial-fastening experience and Remember Continental is constantly improving ingenuity of Continental. lowering their cost and broadening service. HOLTITE products,

#### ENGINEERED FASTENINGS FOR PRODUCT ENGINEERS

A. A typical flat head HOLTITE steel woodscrew. Continental makes a complete range of sizes with either slotted or Phillips heads.

B. Special Phillips "HOLTITE-Thredlock" door hinge screw eliminates lock washers and other locking devices giving improved performance when subjected to vibration.

Dial adjusting screw specially designed for bathroom scales. Screw inserted in frame is swaged against square shoulder under head. Completed part engages scale leveling mechanism to allow screw driver adjustment.

D. Beater drive shaft for a home electric mixer. Continental engineered this unusual part and produced it economically by cold heading process. Head end is welded to the beater unit. HOLTITE Cold heading process. Fread end is well as Knurled section provides grip for motor chuck.

This Trademark T. M. REG. U. S. PAT. OFF.



#### THE WHY OF THE DRIVE FOR HEAVY STEEL SCRAP

The U. S. Department of Commerce, Office of Industry Cooperation, has issued the following questions-and-answers explanation of the Iron and Steel Heavy Scrap Drive:

1. Why is the Department of Commerce, in cooperation with other Federal agencies and industry, sponsoring an iron and steel heavy scrap drive?

To help increase the production of steel and castings for which heavy scrap, now in short supply, is a chief raw material.

2. Is more steel production needed? Yes. Even at the 1948 high annual rate of steel ingot production-88,-500,000 net tons-there was not enough steel to meet the demands of our domestic economy, military requirements, and the foreign aid program.

3. Are steel and iron facilities being expanded to help meet these demands?

Yes. On January 1, 1949, raw steel capacity according to the American Iron and Steel Institute was 1,187,-000 tons higher than on January 1, 1948, and blast furnace capacity, 3,102,000 tons higher. Present schedules call for the addition during 1949 of 2,183,000 tons of steel-making capacity and 1,132,000 tons of blast furnace capacity.

4. If sufficient heavy scrap is available, how much steel can be produced in 1949? An estimated 92,000,000 net tons according to the American Iron and Steel Institute.

5. Will everyone be asked to participate in this drive?

No. The drive will concentrate on obtaining heavy scrap from industries, farms, and auto wrecking yards. Householders will not be asked to participate, since households yield chiefly light scrap.

6. Why is the drive concentrating on heavy scrap?

Because heavy scrap will produce more steel and castings more quickly than light scrap. By using heavy scrap instead of light scrap the efficiency of steel mill operations is increased in two ways: (1) For each melt, charging time is shorter because three times as much scrap can be placed in the charging boxes used to load steel furnaces; and (2) the percentage of scrap converted to steel is greater because there is less surface area and therefore less loss in the melting operation.

7. To what extent is scrap used in the production of steel?

Last year scrap constituted more than half of every article made of iron and steel; the average was 53.3 percent scrap and 46.7 percent pig iron. Each year since 1940, the amount of scrap has exceeded that of pig iron.

8. Why is heavy scrap in short supply? During the war 123,000,000 tons of steel and steel products were shipped

(Please turn to page 208)

1949



#### LOOKING FOR ...



CHASE is at your service to supply you with a great variety of free-cutting brass and bronze alloys in round, hexagonal, and octagonal rod; square or rectangular bar, and many shapes.

Chase rod alloys are extruded and cold drawn to finished dimensions...are uniform in composition and structure... and made to close dimensional tolerances. Our regular alloys are available in quite large diameters and long lengths.

In Chase free-cutting brass rod about 9,000,000 lead particles are removed in one revolution of a ¼" drill! Each particle contributes to the ease of machining that results in longer tool life!

#### Why you should specify CHASE!

- 1. The largest network of brass and copper warehouses.
- 2. Chase warehouses mean faster delivery, less idle tool time.
- **3.** Free advisory service in the selection of copper alloys.
- 4. Because Chase is the na-

tion's headquarters for brass and copper, you can do "onestop" shopping. Many items needed for assembly work or maintenance, such as bearing bronze and rivets, can be supplied...in addition to raw materials needed for production.

### Chase,

the Nation's Headquarters for BRASS & COPPER

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK . . . handlest way to buy brass

ALBANYT ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTONT INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER SAN FRANCISCO SEATTLE ST. LOUIS WATERBURY (Tindicoles Sales Office Only)

meet the best man to see about

saws

Your Victor . Hack Saw Distributor

> Get acquainted with your Victor Hack Saw distributor. He'll be glad to show you how to cut metals and non-metals easier and faster, and cut costs too with Victor Hack Saw Blades.

And while you're at it ask him for the NEW Victor Wall Chart for your workshop – the Victor Metal Cutting Booklet for your pocket or tool kit – both are packed full of helpful information . . . ABSO-

SAW WORKS, INC.

(Continued from page 206) overseas, and only a fraction of this tonnage will be returned to this country. Heavy war production used up enormous tonnages of scrap material. A virtual halt has been called on the junking of old vessels and military equipment which until recently have been a source of scrap. In addition, scrap requirements have increased because productive capacity of the iron and steel industry has expanded.

9. Will all the heavy scrap required for expanded 1949 production come from domestic sources?

No. It is expected that more than 2,000,000 tons will come from foreign countries.

10. What are the sources of domestic heavy scrap?

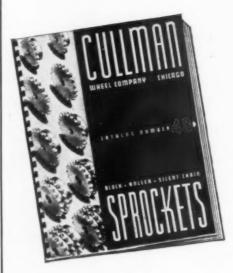
The principal sources are our industries, farms, and auto wrecking yards. Industries have large amounts of obsolete machinery parts and equipment such as tools, dies, jigs, and fixtures; farms have obsolete farming machinery and equipment; and auto wrecking yards have the thousands of autos and trucks junked each

11. What kinds of heavy scrap come from industry?

> There are two chief types of scrap, "home" or "intraplant" scrap and "purchased" or "open market" scrap. Home scrap is the waste or by-product of operations within steel mills and foundries. It is remelted to make (Please turn to page 210)

HAMMERS TALK PRODUCTION!... FORGING KNOW FORGINGS! ...

OVER 80.000 SPROCKETS IN STOCK



OFF THE PRESS!

Cullman Wheel's new catalog, comprising eighty pages of unusually instructive data is yours for the asking. Rarely has been such a mass of instructive technical data on sprockets, block, roller, silent chain and speed reducers produced in catalog form. In addition to thirty pages containing photographs, are some seventy pages of elaborate specification tables for quick buying reference. Better send for it at once!

Cullman Wheel Company also produces a line of Speed Reducers for motors from ¼ to 15 H.P.

1352P. ALTGELD ST. . CHICAGO 14, ILL.

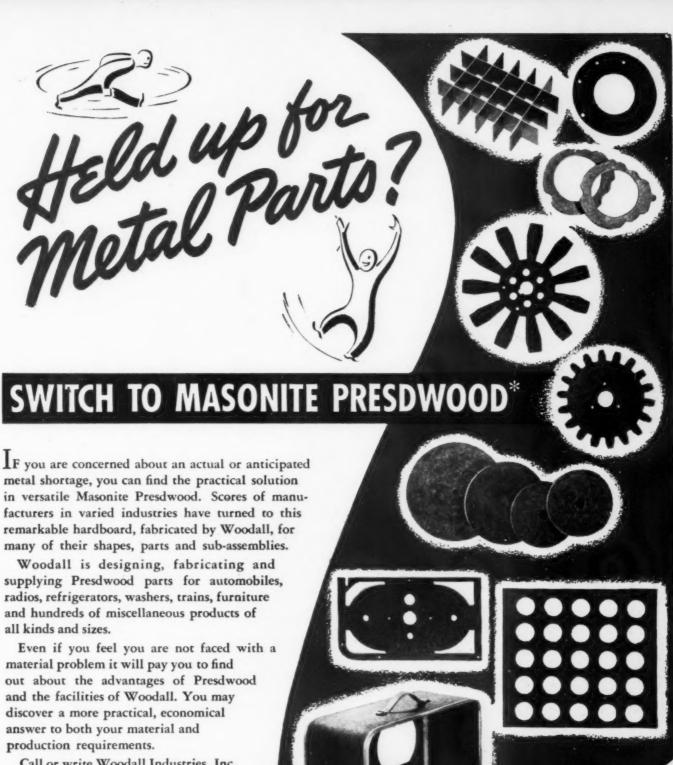
117-C

WRITE OUR

THE BILLINGS & SPENCER CO.

Hartford 1, Conn., U.S.A.

EORGINGS DIV Dept SF- 3



Call or write Woodall Industries, Inc., 7559 McNichols Rd., Detroit 5, Mich.

\* In addition to Presdwood, Woodall fabricates other sheet materials as determined by the application. Twentynine years of research and engineering experience underwrite Woodall's fabricating ability.



WOODALL | NDUSTRIES | NC.

for Industrial

Plants in: LONG ISLAND CITY, N.Y. . CLEVELAND, O. . DETROIT, MICH. . MONROE, MICH. . CHICAGO, ILL. . LAUREL, MISS.



(Continued from page 208) more steel and castings in the mills and foundries where it originates.

Purchased scrap takes many forms. The great bulk consists of old railroad cars and rails, broken-up ships, wrecked buildings, old autos and trucks, worn-out farm equipment, industrial machinery, and other obsolete items. Purchased scrap also includes "production" or "prompt" scrap which is a by-product of metalworking plants. In fabricating, machining, and other processing operations an estimated 12 percent of the steel materials and 5 percent of the castings used become scrap.

12. What amounts of purchased scrap are obtained from the major sources?

In 1948, with a record melt of 29,000,000 gross tons of purchased scrap, the totals obtained were as follows: Production scrap, 9,50,000 tons; railroads, 4,000,000 tons; auto wrecking yards, 1,500,000 tons; Government agencies (ship breaking, war surplus, etc.), 1,500,000 tons; farms, 3,0,0,000 tons; and diverse sources, 9,500,000 tons.

13. How can industry help the scrap

The Scrap Drive Committee urges every plant to appoint one top official as Salvage Director with full responsibility to investigate heavy scrap possibilities and with full authority to sell any unneeded iron and steel items.

14. Besides helping to increase steel production which will result in more equipment how will industry benefit by aiding the heavy scrap drive?

It will clear much needed and valuable floor space.

It will eliminate inventory costs on unnused equipment.

15. How can this scrap best be supplied to the steel mills and foundries?

Through normal channels of trade the local scrap dealers who are equipped to prepare and ship it promptly.

#### MINERAL WOOL INSULATION FOR LOW TEMPERATURES

Commercial Standard CS 105-48 (Superceding CS105-43), Mineral Wool Insulation for Low Temperatures, to establish minimum specifications for insulating low-temperature areas with mineral wool for the guidance of manufacturers, distributors, installers, contractors and users, is now available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. The price is 10¢ per copy.

This standard covers minimum physical and chemical requirements of mineral wool in loose, granulated, felt, industrial batt, and board or block forms. It includes thicknesses of insulation required for various operating temperatures, specifications for auxiliary materials, tests, installation requirements, and method of guaranteeing compliance with the standard.

(Please turn to page 212)

Street Address\_\_\_

### Your Engineering

Product development and molding for Eureka-Williams

Corporation.

An illustration from

#### FOR PLASTICS NEEDS AMOS INGENUITY

Amos ability to engineer for *economical* production . . . and to cooperate personally with you in product development insures satisfaction of a *quality* job where plastics must *SELL*.

Economy comes with doing a job right . . . from the beginning. Call the Amos product engineer first. He is the top man in his field, one with whom you'll enjoy working.

So that we'll work together better, learn in advance what to expect of us. Write for our new 52-page booklet illustrating Amos facilities . . . and picturing in full-color sales and engineering ideas developed by Amos for every industry.

#### AMOS MOLDED PLASTICS

Division of Amos-Thompson Corp.



Custom molders of quality plastic parts and products . Injection molding specialists

## WHERE STEEL IS folded INTO CHAIN



#### BUY AMERICAN-THE COMPLETE CHAIN LINE



Yerk, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.

AMERICAN CHAIN DIVISION AMERICAN CHAIN & CABLE

In Business for Your Safety

#### SODIUM PENTACHLOROPHENATE AVAILABLE IN PELLETS

Dowicide G, water-soluble sodium pentachlorophenate, germicide and fungicide for control of micro-organisms, is now available in hard pellets comparatively free from dust, according to the Dow Chemical Co., Midland, Mich. The small



The new pellets are packed in 200 lb. fiber drums.

cylindrical pellets are compressed to one fourth the volume of the original flake. The product has been used in the adhesives, paint, leather, lumber, petroleum, pulp and paper, textile and disinfectant industries and by agriculture to prevent losses caused by mold and bacteria.

#### ASA STANDARDS FOR CHEMICALS OF PHOTOGRAPHIC GRADE

American Standards for 24 chemicals of "photographic grade" have just been approved by the American Standards Association and published for use by chemical manufacturers, processors of photographic materials, photographers who mix their own processing solutions, and manufacturers of photographic film. These are the first in a series of American Standards which will define the exact grade of all commonly used types of chemicals to assure good results in processing of photographic materials. Work on 28 additional standards is now going forward and it is expected that completed editions will be available within the next few months.

These standards for developing agents, alkalies, sulfites, restrainers and antifoggants, fixing agents, acids, hardeners, and a group of miscellaneous chemicals, are needed because even a small amount of certain impurities may have a harmful effect on the finished picture.

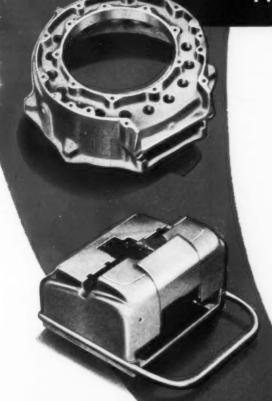
Although the specifications have been based on requirements for processes used in black and white photography, the committee members indicate that they are considered to be entirely adequate for chemicals used in the color processes followed at the present time.

Copies of the 24 American Standards for Photographic Grade Chemicals are available from the American Standards Association, 70 East 45th Street, New York 17, N. Y. at 25 cents each.

(Please turn to page 214)

TAKE THE DEAD WEIGHT OUT OF YOUR PRODUCT WITH

## DOLER-MAG"\* MAGNESIUM



YOUR PRODUCT

could be a design success story like these!

SCINTILLA DISTRIBUTOR HOUSING FOR AIRCRAFT ENGINES

Lightness plus our ability to cast the many holes determined the use of "DOLER-MAG" die casting in this operation.

81/2" Diameter x 31/8" High. Weighs-1.85 lbs.

#### UNDERWOOD ELECTRIC TYPEWRITER

(Assembled)

The number of magnesium die castings used in this unit reduce weight and provide necessary stiffness and rigidity. Damping capacity effectively reduces vibration and operational noise.

Six parts — Total Weight 4.573 lbs. Equivalent steel parts weigh 4 times as much.

\*Reg. U.S. Pat. Off.

"DOLER-MAG" magnesium die castings give you these advantages:

Lightest weight alloy die cast - Supply inexhaustible Non strategic - Machining at higher speeds - Machining with greater economy - Excellent dimensional stability Excellent noise damping quality - Excellent paint or coat finish - Non sparking - Non toxic - Non magnetic.

SEND FOR MORE INFORMATION TODAY.

Doehler-Jarvis Corporation 386 Fourth Avenue, New York 16, N. Y.

Dept. 5-2

Please send me your special pamphlet on "Doler-Mag," plus other technical pamphlets on various die casting applications.

Name.....

Company.....

Street....

.....State.....

### DOEHLER-JARVIS CORPORATION

The World's Largest Producer and Finisher of Die Castings

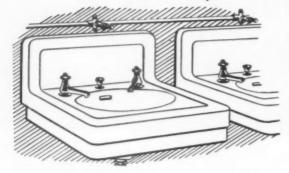


Executive Office

386 FOURTH AVENUE NEW YORK 16, N. Y.



### How Much Does Soap Really Cost You?



Not cost per gallon...

But cost per person!

THE PROPER USE of soap in washrooms will effect important savings in your present maintenance cost. Gerson-Stewart's practical plan of Systematized Sanitation not only furnishes the finest quality products, but plans and supervises methods and procedures for most economical use. You'll get better results, at lower cost, from your own plant-keeping personnel. More than 30 years of proved performance in many of the nation's leading concerns guarantees satisfaction.



Write today for booklet about this simple, individualized plan which enables your present personnel to do more tasks—better!

The GERSON-STEWART Corp.

INSURE AGAINST COSTLY ILLEGIBLE MARKINGS WITH PERMANENT, LEGIBLE, EASY-TO-USE



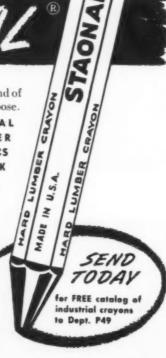
There's a special Staonal Crayon for every kind of surface and every marking or checking purpose.

PAPER • WOOD • GLASS • METAL CHINA • TIN • LEATHER • RUBBER WET LUMBER • DRY LUMBER • FABRICS CELLOPHANE • STONE • LIVESTOCK

Staonal Crayons are indelible and waterproof or removable, as required. Available in a wide variety of colors, including black and white, they are created to meet industry's most exacting needs.

#### BINNEY & SMITH CO.

41 East 42nd Street New York 17, N. Y.



#### SPEED CLINCH FASTENERS ANNOUNCED BY TINNERMAN

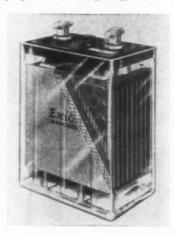
Illustration shows Speed Clinch Fastener, announced by Tinnerman Products, Inc., 2035 Fulton Road, Cleveland 13, Ohio. It is used for applying asbestos cement siding to gypsum sheathing. A two-headed nail-like fastener that spreads at the base as it is driven with the



hammer, the Speed Clinch provides positive anchorage in either single or laminated sections of the sheathing. Clinching action is automatic. The fasteners are made of steel wire cadmium plated to resist corrosion. They have no sharp points and are safe and fast to use.

#### NEW EXIDE BATTERY FOR STATIONARY POWER

Illustration shows new battery of the sealed glass jar type, known as the Exide-Manchex, recently announced by the Electric Storage Battery Company, Philadelphia, Pa. It is applicable to all types of stationary power in electric utilities, railway signaling, telephone, emergency power and lighting, and other



The Exide-Manchex is available in variety of sizes and capacities from 40 to 960 amp. hours.

general applications. It is said to feature unusually long life, low maintenance cost, improved electrical characteristics, increased power output per unit of space, and less weight per ampere hour output. It is available in a wide variety of sizes and capacities from 40 to 960 ampere hours. Form 4852 describes the Exide-Manchex in detail.

SEE BUYER'S & SELLER'S MART PAGES 360 & 361



#### YOU CAN BE SURE...

that Westinghouse Lamps are of the highest quality



#### YOU CAN BE SURE...

that you can buy Westinghouse Lamps everywhere, and get them promptly



#### AND YOU'LL NEVER DO BUSINESS WITH NICER PEOPLE

That's our distributors we're talking about, not ourselves. Yessir, it'd be hard to find a finer group of businessmen. In our book they're A-1 for the kind of personal service they give customers. And, remember, they handle a complete line of the best lamps money can buy. If you don't know who your distributor is, write the nearest Westinghouse Lamp District Office. Or Lamp Division, Westinghouse Electric Corp., Bloomfield, N. J.





YOU CAN BE SURE ... IF IT'S Westinghouse the Name You know in Samueles



### Faster and Faster

On fabrication, assembly and installation, modern portable power tools enable manufacturers to drive screws faster, easier, and more accurately. Are the screws you drive keeping pace with the efficiency of your drivers?

Your assemblers can drive Corbin screws faster, hour after hour—without hitting a bad one—because they are uniform in material, finish, size, head style, and quality. Corbin uniformity pays by helping you turn out a better product—and by helping you realize the cost-cutting potentialities of your best power drivers.

Corbin makes machine screws, tapping screws, wood screws, and Sems, both slotted and Phillips, in sizes and styles to meet your needs for wood, metal, or plastic. Use them—faster!





ALWAYS ASK FOR FASTENERS MADE BY ...

### CORBIN SCREW

DIVISION

THE AMERICAN HARDWARE CORPORATION . NEW BRITAIN, CONN. Warehouses: New Britain . New York . Chicago

#### PER CAPITA PAPER CONSUMPTION IN 1948 356.9 LBS.

Record paper consumption in 1948 raised per capita consumption for that year to an estimated 356.9 lbs., an increase of 14 lbs. over 1947, according to the December Statistical Summary of the American Paper and Pulp Association, recently released.

The Summary states that the prospects for the paper industry in 1949 are related to prospects for general industry, in that the paper industry is a service industry with its welfare closely tied in with general business. All industry will be considerably influenced by Government action, and though the President has presented his State of the Union, Economic and Budget messages, Congressional action has not as yet become sufficiently defined for industry to determine Governmental action.

A further analysis of the industry's 1949 prospects brings out the fact that inventory building by customers has apparently ceased and that 1949 demand for paper should more closely reflect actual consumption.

Pulpwood, wood pulp and waste paper remain in ample supply. Estimates place total receipts of pulpwood for 1948 at a million cords above 1947. Wood pulp production in 1948 reached a new record high of approximately 13,000,000 tons. Waste paper receipts for 1948 reached an estimated 7,500,000 tons, a decline of 300,000 tons under 1947 because of the tapering-off in demand.

#### + + + NEW STAINLESS-CLAD STEEL

Permaclad is the name of an easily-formed, corrosion-resistant stainless-clad steel now being made by the Alan Wood Company, Conshohocken, Pa. The new sheets consist of a layer of stainless steel diffusion welded to a mild steel backing. The sheets are metallurgically correct on one side for maximum corrosion resistance, yet possess the ductility and other physical properties of plain carbon steel.

Permaclad has excellent cold forming properties unattainable with solid stainless steel and can be subject to much deeper draw without intermediate annealing. It can be metal arc welded, spotwelded, or soldered. Also, polished Permaclad can be drawn or stamped without injury to its surface if protected with one of the several plastic coatings available.

In manufacturing standard Permaclad, the stainless layer is 10% of the total thickness of sheets #13 gauge and heavier, and 20% of the thickness of lighter sheets. The percentage of cladding can be increased as desired, and special types of stainless or stabilized grades can be furnished. Also, special types of backing steels are available, including AW Dynalloy high strength low alloy steel. Incombination with stainless cladding Dynalloy provides weight reduction and ease of forming.

Eight-page folder detailing Permaclad is available for the asking.

(Please turn to page 218)

# Put this WINNING COMBINATION to work for you!



### Hines Expert Engineers



# Hines MODERN MACHINES



### Hines LUMBER SUPPLY

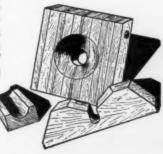
Which one of the three—engineering, production, lumber procurement—is bothering you? Hines is ready and able to solve any one of your problems as far as wood is concerned —or take over the complete job of wood parts production. We are doing a money saving job for many large manufacturers and are ready to go to work for you. If you are interested in cutting costs, phone, write or wire today!

#### EDWARD HINES LUMBER CO.

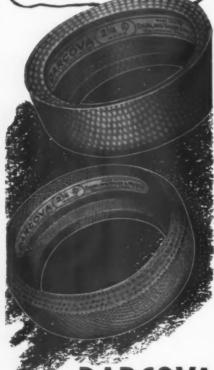
ENGINEERED FABRICATION DIVISION 2431 So. Wolcott Ave., Chicago 8, Illinois

# WOOD PARTS IN ALL SHAPES AND SIZES

 In many cases wood is better and more economical.
 It will pay to investigate the savings effected by Hines "forest to you" service on wood parts.



### Effortless way to reduce Pumping Costs!



Specify DARCOVA

. . . the ORIGINAL

# composition valve cups, seating cups and rings

• Precise control of all materials and processes from lab to well means exceptional resistance to wear and deterioration... fewer pulling jobs! • Different textures, scientifically developed, fully proved, give peak efficiency and longer flex-life at any depth! • Accurately controlled sizes for any make or size pump... no misfit inefficiency! • Ask for genuine Darcovasatyour supply store.

#### DARLING VALVE AND



#### MOVING PICTURE ON USE OF SPEED NUTS

"The Speed Nut Saving Factor" is the title of a 16 mm. black and white sound film, 17 minutes in duration, developed by Tinnerman Products, Inc., 2038 Fulton Road, Cleveland, Ohio. The picture depicts in story form how careful analysis of a company's production and assembly methods can result in substantial savings through the use of modern time-saving fasteners. Information about use of the film may be had by writing W. M. Buttriss, Director of Sales Promotion and Advertising.

#### HEAVY EXPENDITURES FOR EXPANSION IN STEEL SCHEDULED

Companies of the iron and steel industry spent a record amount, totaling \$583,-000,000 during 1948 to expand and improve their production facilities, American Iron and Steel Institute announced recently.

Even more money will be spent this year, the Institute said. The expenditures will be raised to a total of \$627,000,000.

A total outlay of more than two billion dollars will have been made by the end of this year for postwar expansion and improvement. At that time it is expected that annual steelmaking capacity will be at a record high level exceeding 98,300,000 tons. An additional 500,000 tons will be added in 1950.

The huge total outlay last year enabled the companies to increase their combined steelmaking capacity by more than 1,887,000 tons. In addition to constructing and improving steel furnaces, the companies increased the capacities in their blast furnace, coke oven, and other raw material departments and added to processing and finishing facilities in order that the additional raw steel could be made into usable finished products.

This year's plans for a record outlay of \$627,000,000 will increase steel capacity by about 2,200,000 tons, and provide necessary facilities to roll that additional steel into finished products.

The Institute cited a comparison to illustrate the sharp increase in the cost of expanding and improving facilities. The amount spent last year, when 1,-887,00 tons of capacity was added, was more than four times greater than ten years earlier when about 1,600,000 tons was added to raw steel capacity with the companies' expenditures totaling only \$140,000,000.

#### OAK FLOORING STANDARD

1 1 1

Oak Flooring, Commercial Standard CS 56-49, effective for new production as of February 25, 1949, was recently announced by the Commodity Standards Division, National Bureau of Standards, Washington, D. C. Printed copies will be available from the Superintendent of Documents, Government Printing Office, Washington, D. C., in due course.

(Please turn to page 220)

# THE SAFE OPEN STEEL FLOORING IS TRI-LOK



No object over ½ square inch can pass through super-safe U-Type Tri-Lok Flooring. Fabricated without bolts, rivets or welds, it is unsurpassed for plant installation, walkways, loading platforms. Efficient distribution of concentrated loads... maximum free opening for light and air. Write for Bulletin JV-1140.

#### DRAVO CORPORATION

National Distributor for the Tri-Lok Company

Iravo Bidg., Pittsburgh 22, Pa.

Sales Representatives in Principal Cities





Model 211

Big Beam is the accepted standard in portable illumination. A powerful, searchlight beam or a bright spread light—either is instantly available through the convenient, finger-tip control on the adjustable head. These lights are well built for long service, attractively finished, weatherproof, and lightweight for easy carrying.

A shoulder strap, hold-down bracket, colored lens, and other accessories increase the use and convenience of all Big Beam Models.

Many Dry-Cell and Storage Battery Models.

Ask your supplier, or write direct for full particulars.

U-C LITE MFG. CO.
1051 West Hubbard Street, Chicago 22, Illinois

# CELANESE\* n-PROPYL ALCOHOL

H H H H OH

# in Volume

Celanese production of n-propyl alcohol is now meeting largescale demands. This straight chain alcohol—applicable to processes where its characteristic excellent solvent action and miscibility can be used to advantage—is available for shipment in drum or tank car amounts.

#### PHYSICAL PROPERTIES

MOLECULAR WEIGHT
COLOR
ODOR
SPECIFIC GRAVITY 20°/4° C
DISTILLATION RANGE ASTM °C
WEIGHT PER GALLON 20° C
SOLUBILITY

FLASH POINT open cup
BOILING POINT 1 atm.
FREEZING POINT
VAPOR PRESSURE 100° F
RELATIVE FVAPORATION RATE

water white
characteristic alcohol-like odor
0.8044
2° including true boiling point
6.7 lbs.
soluble in water and practically
all organic solvents

97.2° C -127° C 0.9 lbs. per sq. in. absolute 11.1 (ether = 1)

If you are looking for an improvement in your products, or short cuts in processing, the straight chain advantages of n-propyl alcohol are worth investigation. n-Propyl alcohol allows the solvent user greater solvent formulation freedom and can be used as a replacement and extender for higher alcohols. Call or write for additional information and specifications.

CELANESE CORPORATION OF AMERICA,

Chemical Division, 180 Madison Avenue, New York 16, N.Y.



#### U.S.P. FORMALDEHYDE

Formaldehyde, one of the most important products in the growing family of Celanese Organic Chemicals, is now offered in greater volume. This high quality, U.S.P. chemical is sold commercially as formalin, a water white solution containing 40% formaldehyde by volume, 37% by weight. It is obtainable in both methanol inhibited and uninhibited grades.



ALDEHYDES · ALCOHOLS · ACIDS · SOLVENTS · GLYCOLS · KETONES · PLASTICIZERS



#### 2 FOUNDRIES

on 2 main line railroads

equipped for fast, efficient production to meet your casting requirements. Special facilities for rollover and copeand-drag production to 150 pounds. Other castings up to 1000 pounds. Send us your inquiries or ask for a representative to call to discuss your casting requirements.



#### RECORD PIG IRON OUTPUT; ALLOY STEEL PRODUCTION AT NEW PEACETIME HIGH

Pig iron production in December was higher than in any previous month in war or peace, at 5,525,000 net tons, according to the American Iron and Steel Institute. The total for 1948 at 60,136,000 tons is a peacetime record, 1,629,000 tons larger than in 1947, but short of the 1944 wartime record by more than 1,000,000 tons because of the setbacks during the April and July coal strikes of 1948.

Including ferromanganese and spiegeleisen, December output was 5,595,000 tons, making the total for the year 60,848,-840 tons. Blast furnace operations in December were at 98.1 per cent of capacity and at 90.2 per cent for the year. Foregoing figures on pig iron output include "silvery" iron

Production of alloy steel ingots and steel for castings made a peacetime annual record in 1948 at 8,472,781 net tons, compared with 7,428,231 tons in 1947. Open hearth output accounted for 6,401,000 tons of this total while electric furnace alloy output was 2,072,000 tons.

Total electric furnace output attained a record, exceeding war years, at nearly 4,979,000 tons, owing to large production of carbon steel in this type of furnace. This figure exceeded that of 1947 by 1,-191,000 tons.

Total ingot and steel for casting production in 1948 was revised to 88,533,729 net tons, compared with 84,894,071 tons in 1947.

#### FILM ON AIR CONDITIONING

A new 16 mm sound motion film in color on the functions and benefits of air conditioning in commerce and industry and in the home, is announced by the Carrier Corporation, Syracuse, N. Y. Entitled "Services Unseen," the 22-minute film covers the history of man-made weather from the development of the principles of air conditioning to its present state of usefulness, and demonstrates the four functions of air conditioningcleaning the air, control of temperature and humidity, and circulation of the air. The processing of cotton and nylon is shown under both controlled and uncontrolled atmospheric conditions. Other activities include blast furnace operations. candy-making, meat processing, and the production of medicines and precision equipment.

The film is available without charge for showings by organized groups through Castle Films, 445 Park Avenue, New York, N. Y.

#### MONSANTO ADOPTS LABEL LUSTREX FOR POLYSTYRENE PLASTICS

Announcement is made by the Monsanto Chemical Co., Springfield, Mass., that it has adopted the single label Lustrex for its polystyrene plastics products. Lustrex will be classified for specific uses and formulations which will be indicated by a suffix following the label name.

(Please turn to page 222)

# Here's help

for shops machining stainless steel



THE increasing use of stainless steel is presenting new machining problems to many shops. D. A. Stuart Oil Co. has collected much valuable information on this subject from long experience and is particularly well qualified to assist the industry. For example: a Wisconsin plant had tried a wide variety of oils for tapping Type 310 stainless and was still getting but 50 holes per tap. With Stuart's ThredKut 99, used straight, they had secured 550 holes with one tap. In another plant, a Type 304 stainless steel union being made on a Cleveland Automatic was a slow and unprofitable job. A change to a 6 to 1 blend of Stuart's ThredKut 99 increased output from 18 to 31 pieces per hour and this is now one of the more profitable jobs in the shop.

These results are not exceptions, nor does D. A. Stuart profess to work miracles. It is simply that study plus trial and error on thousands of stainless steel machining jobs has given the company a worthwhile fund of knowledge on the subject. This experience and information is available to anyone interested in getting better finishes, longer tool life or faster production on stainless. For further information write, or call a D. A. Stuart representative.

D.A. Stuart Oil CO.



# "Keep me for reference"

Here's your quick reference file for Morse Mechanical Power Transmission Products

As a purchasing engineer, design engineer or maintenance man — here's help in getting the best in mechanical power transmission. In making your choice, use this handy check list of the basic Morse Chain line—the finest mechanical power transmission products available.

There are 20 Morse branches capable of giving expert engineering counsel on power transmission problems.

MORSE

MECHANICAL
POWER TRANSMISSION
PRODUCTS





Morflex Couplings



Morflex Radial Drive Shafts





Morflex Radial Couplings



Morse-Rockford Over-Center Friction Clutches



Morse-Rockford Pullmore Clutches



Morse-Formsprag
Over-Running Clutches



Silent Chain Drives



Roller Chain Drives

NOTE: Distributors—there's one near you—carry stocks from which quick deliveries can be made. Write Dept. 312, Morse Chain Company, 7601 Central Avenue, Detroit 8, Mich., for further information about any or all products.



- MATERIALS
- MAN-HOURS
- MONEY

with the . . .

RIGHT RIUETS

Select exactly the right semitubular, split rivet, or coldheaded fastener from Milford's complete line. You'll find it





setting machine for your application. One of Milford's 15 basic machines is sure to solve your particular problem . . . and slash your production costs!

Write to Dept. B

MILFORD 💆 RIVET & MACHINE

O M P A N MILFORD, CONN. ELYŘIA, OHIO HATBORO, PENN.

#### AUTOMATIC CARTONING MACHINE PACKS ELECTRONIC TUBES

An automatic cartoning machine which packs electronic tubes into individual cartons has been placed in operation by General Electric's tube divisions at its Owensboro, Ky., tube warehouse. Replacing hand packing, the automatic cartoner feeds the flat folding cartons from a magazine. Then it makes up the carton, inserts a tube, closes the top and bottom tuck in flaps and imprints the tube type designation on the top panel of each carton in one continuous automatic operation, at the rate of 160 cartons a minute. The machine utilizes a special folding carton with an inner platform which forms an integral part of the one-piece reverse tuck carton. The one-piece construction eliminates the necessity of additional wrappers or die-cut devices to cushion tubes. The cartoner will handle three sizes of cartons which comprise 75% of the receiving tubes packaged for replace-

#### NEW FIBERGLAS-PLASTIC LAMINATE FOR ELECTRICAL APPLICATIONS

A new Fiberglas-reinforced industrial plastic laminate designed for elevated-temperature electrical applications and known as Glastic is announced by Laminated Plastics, Inc., Cleveland, Ohio.

Important characteristics of this new laminate, providing a comparison with those of materials now commonly used for Class B electrical insulating jobs, are its unique combination of good resistance to elevated temperatures and good machinability, together with high impact and flexural strength values, good resistance to delamination, good arc-tracking resistance, and low moisture absorption.

As insulating panel stock, the laminate will stand long exposure to high temperature without embrittlement or blistering. It resists tracking well. For instance, a 1,000-volt arc drawn over the surface will produce a carbonized area only about one-eighth inch wide. This area will conduct current only poorly and without following any definite track. The carbonized area will be "on" rather than "in" the material and can be removed by wiping with a cloth, thus restoring the original surface characteristics.

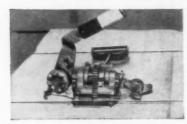
The Glastic laminate is well suited for use as slot sticks, because of its ability to retain its physical properties at high temperatures. Strip stock can be cut with ordinary shears, and the edges of the slot sticks can be chamfered with conventional chamfering tools; or in repair shops, with ordinary hand tools. The slot sticks can be driven into armature coil slots without spreading the ends of the sticks, and without risk of snapping due to buckling.

Other uses of the new Fiberglas-reinforced laminate are as switch washers, control switch plates, field coil end washers, armature slot middle and bottom sticks, and armature end laminations. Glastic is available in thicknesses from one-thirty-second of an inch to one inch, and in sizes from 12 by 18 to 36 by 42 inches.

(Please turn to page 224)

# For speed, security, low cost...

# **GERRARD**Steel Strapping



It's a simple matter to get taut, pilfer-proof bundles with Gerrard Round Steel Strapping. Between the small T A model and the semi-automatic Q model, there's a Gerrard machine to fit your needs. Shown is model L K for cartons, boxes, crates from 75 to 300 pounds.



Every Gerrard machine tensions the strapping, forms its own twisted seal, trimmed smooth with no exposed ends. Note the suspension mechanism which makes the Gerrard machine instantly available over a wide working area.



Gerrard Round Steel Straps secure loaded wooden cases to a pallet for easy handling. Palletizing reduces handling costs . . , and the use of Gerrard Steel Strapping cuts material costs 30% to 50% lower than any other metal reinforcement.



Model Q, semi-automatic . . . tensions, ties and cuts straps in one operation. Bundling of cartons, newspapers and extra-sized packages proceeds rapidly. These are bundles of shingles.

The services of Gerrard engineers are available without charge to help you solve packaging problems. Write for a free copy of Blue Book of Packaging. Gerrard Steel Strapping Company, 4713 So. Richmond St., Chicago, Ill.



GERRARD ROUND STEEL STRAPPING

UNITED STATES STEEL



#### HERDING THE IRON HORSES

In a single day, hundreds of freight and passenger trains move into and out of big city terminals. Marvelous control and signal systems guide them safely from track to track and from town to town.

Exide Batteries supply power for many of these control and signal systems. They also provide current for lighting and airconditioning passenger cars, cranking Diesel locomotives, and for performing numerous other electrical services. There are Exide Batteries for every storage battery need. They are used in airplanes and ocean vessels...by telephone, telegraph and electric light and power companies, radio and television stations. Exide Batteries supply motive power for battery electric industrial trucks and mine haulage units. And on millions of cars, trucks and buses, they give daily proof that "When it's an Exide, you start."

Information regarding the

application of storage batteries for any business or industrial need will be gladly supplied upon request.

THE ELECTRIC STORAGE BATTERY
COMPANY • Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

"Exide" Reg. Trade-Mark U. S. Pat. Off.



1888 ... DEPENDABLE BATTERIES FOR 61 YEARS ... 1949

### Flame hardened molds last longer... produce higher packing quality



Harry Koerner and Steve Smith, Airco Representatives, worked with the Morley Company in devising a special oxyacetylene flame hardening operation to increase the service life of the molds. Two revolving, adjustable-speed table set-ups were used to accommodate symmetrical and circular steel surfaces up to 24 and 64 inches in diameter. Each set-up included three Airco flame hardening

torches and tips for hardening the molds. Depth of flame hardening was controlled to about 1/16" on the lips and faces of each set of molds.

The Garlock Packing Co., expressed extreme satisfaction with the process; they found that the treated molds not only lasted far longer than before, but produced a higher quality of packing. This resulted in more economical service to the packing users.

#### TECHNICAL SALES SERVICE - ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

To assure its customers of high efficiency in all applications of the oxyacetylene flame or electric arc, Air Reduction has available the broad, practical experience of its nationwide Technical Sales Divison personnel. The collective experience and knowledge of these specialists has helped thousands to a more effective use of Airco processes and products. Profit by this Airco "Plus-Value" service. Ask to have a Technical Sales Division man call today. Write: Your nearest Airco office. In Texas: Magnolia Airco Gas Products Company. On West Coast: Air Reduction Pacific Company.



Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Cutting Machines . . . Gas Welding Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories.

#### **VELON SCREENING IS TOUGH**



Picture versus words. This young lady is standing on Velon plastic insect screening, product of the Firestone Plastics Company, Akron, Ohio. The screening is available in three colors; it is easily cleaned, cannot rust or corrode, and will not stain window sills or frames.

#### HEAVY DUTY PAPER TAPE

A paper tape having tensile strength of 180 lbs. per inch of width, known as No. 320 in the "Scotch" brand industrial tape line, is being introduced by the Minnesota Mining and Manufacturing Co., 900 Fauquier St., S. Paul, Minn. The tape is thin (13-15 mils) and flexible, and has a pressure sensitive adhesive which grips immediately upon contact.



Bundling angle irons with the new heavy duty paper tape.

It is designed for use in packaging metal pipes, conduits, rods, rolls, sheets, coils, fittings and tubing, being wrapped once around the load and back on itself. It has more than twice the strength of its strongest predecessor in the line, "Scotch" Super Strength, and more than three times the tensile strength of "Scotch" extra strength tape, both of which are being continued in the line for use in lighter packaging jobs. The strength of the tape is attributed in part to reinforcement of the paper backing with threadlike fibers running lengthwise. The fibers, imbedded in the adhesive, afford a tear resistance greater than can be measured by the ASTM-approved Elmendorf tear tester-greater than 1600 gram-centimeters. Obviously, the new tape can be used for binding and packaging many products other than those mentioned

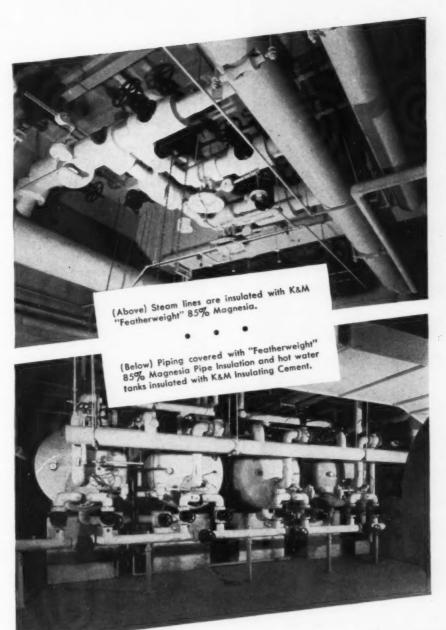
(Please turn to page 226)

# NEW ENGLAND MUTUAL LIFE holds down overhead costs with



Home Office of New England Mutual Life Insurance Company, Boston, Massachusetts.

# K&M "FEATHERWEIGHT" 85% MAGNESIA INSULATION



This imposing home office of the New England Mutual Life Insurance Company, Boston, is supplied with heat from a central heating plant.

The steam pipes are insulated with K&M "Featherweight" 85% Magnesia with the net result that heat losses are reduced to a minimum.

"Featherweight" 85% Magnesia insulation, first manufactured by K&M 62 years ago, combines the high insulating properties of basic Carbonate of Magnesia with Asbestos Fibre as a binding agent, forming a featherlight, fireproof, efficient insulating material.

K&M Distributors, located strategically throughout the country, are experts on the application of K&M insulation materials . . . and can point the way to savings for you. Write us for further information.



Nature made Asbestos . . .

Keasbey & Mattison Company has made it serve mankind since 1873.

KEASBEY & MATTISON
COMPANY · AMBLER · PENNSYLVANIA

Want Additional Product Information? See Page 19.

# MATERIAL MENUA

#### Here, for a fact, is ...

- Industry's No. 1 handling job . . that multitude of items weighing 200 to 1000 lbs.
- Industry's No. 1 opportunity . . . for substantial savings . . . and
- Industry's No. 1 answer . . . the CLARK TRUCLOADER.



Take fruits and vegetables, for instance, or other perishables—here 24 boxes of apples are handled without pallet by the Trucleader and Clark's Clamp-Lift, designed for that very job, at big savings of time, storage space and handling costs.

Wool and cotton bales, too—here two bales of fine blanket wool are taken by the Trucloader via 3000-lb. elevator to second floor storage; and a once tedious chore is done easily.



Rolls of fabric or paper weighing 450 to 600 pounds each are handled easily by the Trucloader. Damage losses practically ended.

Handling metal parts, setting up machining jobs, hustling castings to storage, replacing dies—there are literally a thousand-and-one jobs for the Trucloader.

Do not these successful applications suggest many ways by which you, too, can realize substantial savings with the Trucloader? This versatile machine can be either gas-powered or electric battery-powered. A practical first step is to CONSULT CLARK.

For helpful reading send for "Material Handling News."

# for the CLARK TRUCLOADER these are naturals FRUITS and VEGETABLES by the box AT WOOL, COTTON ...by the bale AT TEXTILES, PAPER ...by the roll AT METAL ITEMS ...by the hundreds



# CLARK FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 23, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
- AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

#### PALLET RACKS SIMPLIFY MOVING LOW LEVEL GOODS

A new type of portable rack for stacking palletized materials is offered in standard and heavy duty models by the Equipment Manufacturing Co., Inc., 21550 Hoover Road, Detroit 5, Mich. The rack



The racks are portable. Low level goods are easily removed.

is designed to accelerate order-picking and case handling by permitting the tiering of pallet loads to ceiling heights without tieing up low level goods. This makes for shortening of order-picking lines and the storing of a greater variety of reserve stocks in one bay. Rack clearance levels are adjustable. Literature available.

#### PACKING TIME AND SHIPPER COSTS RADICALLY CUT

The accompanying illustration shows how a 147-pound rock bit is virtually wrapped up in a 15-pound wirebound box at the Compton, Calif., plant of H. C. Smith Oil Tool Company, preparatory to shipment. The toothed end of the roller bearing bit rests upon the sturdy base,



with the other end atop, and the worker folds the one-piece wirebound "mat" into shape to form the four sides. The end cleats on the sides hold the box ends securely in place.

The company makes roller bearing rock bits from 3½" to 32" for well drilling, which weigh up to 2100 pounds, and boxes were designed for each size of bit up to 12½" weighing 197 pounds. By the use of the new shipper, packing time has been reduced 80%, and container cost has been cut 60%. It is reported that shipping damage has been practically eliminated. The container furnishes adequate protection against dust, dirt and weather. Mr. Smith also reports considerable saving in freight charges incident to low ratio of tare weight to load.

(Please turn to page 228)

#### COPPER ALLOY BULLETIN

**ELECTRICAL MANUFACTURING EDITION** 

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS



Prepared Each Month by Bridgeport Brass Co. "Bridgeport" Headquarters for BRASS, BRONZE and COPPER

#### Reliable Copper-Base Spring Alloys **Lengthen Life of Electrical Devices**

Selection of the proper spring material is an important factor in the manufacture f thousands of electrical and mechanical devices whose operation is dependent upon spring action. Reliability is a most essential property and is dependent on the quality of a vital spring part.

Certain relays, for example, have minimum operating requirements of at least a million cycles. Contact arms must retain dependable spring action throughout this life. Other electrical applications, such as the common electric light snap switch, require spring parts capable of flexing many thousands of times without failure.

Conditions of operation are often far from ideal. There are cases where equipment requires that springs continue to function properly despite temperature extremes, excessive vibration and very corrosive conditions.

The cost of using the highest quality spring material in electrical appliances, switches, signal systems and temperature and pressure controls is insignificant when compared with the total cost of equipment and the risk of preventable failure.

Bridgeport produces a variety of copperbase alloys widely used for electrical and mechanical springs. Each material has a combination of properties and characteristics which recommend it for specific purposes. Our laboratory has had a wealth of experience in the fabrication and application of these alloys. They will be happy to assist you in the selection of the correct material for your product.

Some of the most commonly used Bridgeport copper-base spring alloys are:

Phosphor Bronze - Grade A (approx. 95% copper, 5% tin), Grade C (approx. 92% copper, 8% tin). Excellent spring properties retained under repeated flexing. High fatigue limit and excellent resistance to wear and corrosion. Withstands arcing better than brass. Both alloys have similar properties except that Grade C is used for more severe applications. Used for snap switches, diaphragms, current collectors, spring contacts and parts for radios and electrical instruments.

Aluminum Silicon Bronze 712 - Rich golden color. Does not contain tin. Excellent spring properties, closely comparable with Phosphor Bronze spring metal. High fatigue limit, excellent resistance to corrosion and wear. Recommended for the same applications as Phosphor Bronze. This alloy is more sensitive to season cracking than Phosphor Bronze. Relief annealing of finished spring parts materially increases its yield strength and incidentally reduces any residual stresses which may be present.

Nickel Silver-18% Grade B (approx. 55% copper, 18% nickel, remainder zinc). Silver white color, corrosion resistant. Possesses good spring properties and high electrical resistance. Used for spring parts and contacts for telephone boards, radios, electrical controls, jewelry findings, optical goods, surgical and dental instruments, diaphragms.



Simple and complex spring parts are easily fab-ricated from Bridgeport's Phosphor Bronze for variable condenser. Courtesy General Instru-ment Corporation, Elizabeth, New Jersey.

Silicon Bronze 632-(approx. 97% copper, 3% silicon). It is stronger, tougher, stiffer and more wear resistant than brass. Often used for flat springs in electrical snap switches and special control instruments where movement is not too great. Excellent for parts exposed to weathering.

Tin Brass 92 (Jewelers Bronze)-(approx. 89% copper, 1.9% tin, remainder zinc). Has fair spring properties and is used as a substitute for Phosphor Bronze spring metal.

Spring Brass 37-(approx. 69.5% copper, remainder zinc). Good quality high brass rolled 8 B&S numbers hard is known as spring brass because it is stiff and springy. Used for light duty flat springs. Not recommended for outdoor use or for conditions requiring repeated flexing.

#### **Bridgeport's Improved Phosphor Bronze Used In Master Cam Switch**



General Control Company's Master Cam Switch uses contact spring leaves made of Bridgeport's Improved Phosphor Bronze.

Contact spring leaves in this cam lever switch used for radar, radio, communications and other electrical equipment must have dependable spring properties to with-stand constant flexing. The higher dependability factor of Bridgeport's Phosphor Bronze is one reason why it is widely used in such switches and other vital parts of electrical and electronic equipment.

Through better processing methods and the use of better equipment this alloy has been consistently improved and ranks high as a modern engineering material of exceptional fatigue resistance, high tensile and yield strengths as well as corrosion resistance and great toughness. These properties are of great value in the development of new electrical products and the improvement of existing ones.

The use of Bridgeport's Improved Phosphor Bronze and other engineering alloys pays many times over in reduced maintenance, improved performance and longer service life.



BRASS · BRONZE · COPPER · DURONZE - STRIP · ROD · WIRE · TUBING

#### BRIDGEPORT BRASS COMPANY

General Office: 30 Grand St., Bridgeport 2, Conn. Established 1865



District Offices and Warehouses in Principal Cities

Mills at Bridgeport, Conn. and Indianapolis, Ind.

In Canada:

Noranda Copper and Brass, Limited, Montreal

#### NOW YOU CAN GET SPECIAL HINGES

Any Size, Shape, Quantity or Finish From the World's Largest Hinge Maker

You just specify the hinge you want — STANLEY does the rest, from first sketch to finished product. As the world's largest producer of hinges, STANLEY is geared for efficient production to meet your needs—any finish in large or small quantities. Write or phone our nearest office for full information.





HARDWARE . HAND TOOLS . ELECTRIC TOOLS . STEEL STRAPPING

#### The trained hand of Hassall offers you:



ITASSALL cold-heading may solve your immediate special part problem...Special nails, rivets and threaded parts made in diameters from 1/32" to 3/8"—lengths up to 7"...Rivets 3/32" diameter and smaller a specialty...also small threaded blanks...Variety of metals, finishes and secondary operations...Economy, quality and quick delivery in large or small quantities...Your inquiries answered promptly...ASK FOR FREE CATALOG...3-color DECIMAL EQUIVALENTS WALL CHART free on request.

#### JOHN HASSALL, INC. 404 OAKLAND STREET BROOKLYN, N. Y.

Manufacturers of Cold-Headed Specialties-Established 1850



#### COLD CATHODE LIGHTING

First used in plants built under the war production program, and now available to private industry, cold cathode lighting differs basically from other fluorescent lighting in that it eliminates the use of filaments and starters which generate excessive heat in other types of lighting, states the Colonial Electric Products Co. As a result, cold cathode gives instant, flickerless and non-fluctuating light at the flip of a switch plus increased life and efficiency with resultant savings in maintenance and replacement costs. Average life of lamps is placed at 15,000 hours, and it is said that it is not unusual to have entire installations serve four and five years and up to 30,000 hours. The Colonial company is planning a series of exhibits and forums on cold cathode lighting to be held in key cities throughout the country.

#### POWER TRUCK FOR HANDLING LARGE PLATE

New type of power industrial truck for handling the largest packs of plate glass ever assembled, and adaptable to handling large sheets of other materials including steel, asbestos, building board, etc., has been developed by the Elwell-Parker Electric Co., Cleveland, Ohio.



Packs of plate glass generally comprise 25 sheets, 1/4" thick, 75 x 1451/2", weigh about 6,000 lbs., loads varying according to gage and areas. The truck has capacity for 10,000 pounds. The truck body is of basic lift-fork, battery-powered design. In place of a fork, however, there is a structural member resembling an elongated wishbone attached to the elevating and tilting mechanism in the truck's upright columns. Head of this member is bent forward to form a short horizontal boom. This has a hook from which is suspended a steel cross-beam. Near each end of the beam there is a long flexible steel cable sling with padded stirrups for supporting the glass. Across the main frame of the attachment and extending horizontally the width of the pack is an adjustable steel apron with rubber facing to form a backrest for the load. Handling in or out of storage requires only a fraction of time formerly requiring a crew of men.

(Please turn to page 230)

# WISSCO BELTS' One // Construction

Permits

#### FREE AIR CIRCULATION FOR

Annealing · Baking · Brazing · Cooling · Drying

#### FREE DRAINAGE FOR

Blanching • Degreasing • Frying • Quenching • Washing

**EACH WISSCO BELT** is custom-engineered for the job it is designed to perform—to operate efficiently at temperatures ranging from -40°F. to 2100°F., or to withstand corrosion, abrasion and other destructive factors.

Each Wissco Belt has in it the skill and experience that comes with 50 years of pioneering in belt development, design and application.

Learn how Wissco Belts can help you cut costs, insure faster production and more uniform quality. Send today for our illustrated catalog showing types and advantages of numerous conveyor belt constructions.



Typical of innumerable food processing operations Wissco chain-driven, stainless steel belts carry potato chips through washing, frying and draining operations with a minimum of manual attention.

WISSCO

METAL CONVEYOR BELTS

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

Belt Sales Office and Plant - 56 Sterling St., Clinton, Mass.

Executive Office - 500 Fifth Avenue, New York 18, N. Y.
Sales Offices - Boston, Buffalo, Chattanooga, Chicago, Denver, New York Pacific Coast Subsidiary - The California Wire Cloth Corp., Oakland 6, Cal.





Removing filings, sawdust and small scrap

# AROUND MACHINES... IN THE PLANT...

#### Modern General Electric Heavy-Duty Cleaners quickly prove their value

From front office to boiler room, General Electric Heavy-Duty Vacuum Cleaners are doing unusual jobs as well as the usual cleaning jobs with new speed, new efficiency, new economy.

Let these powerful cleaners do these and other cleaning jobs for you:

- · wet and dry pick-ups from floors
- cleaning large floor areas (12-in, and 18-in, nozzles save time)
- dusting polished surfaces without scratching
- vacuuming hazardous dirt and dust from high-up areas
- pick-up of heavy dirt and small pieces of metal scrap for salvage.



Wide nozzles speed floor cleaning

The speed and capacity of modern General Electric cleaning equipment will surprise you. It will enable your maintenance department to do more and better work. Send coupon for specification literature. A survey, made without cost or obligation, will tell you just what equipment you need.

#### LUCITE WASHBASIN WEIGHS TWO POUNDS



Washbasin formed of DuPont Lucite, and weighing but two pounds has been developed by the Durabled Formed Products, Inc., 6 Greene Street, New York, N. Y. The overall size of the unit, which is available in variety of colors, is 14¼" x 15". It is immune to the effects of food acids and most chemicals.

#### TRUE GLASS GLASS CURTAINS FIRESAFE AND DURABLE

A true glass glass curtain—firesafe, durable, cleanable and with excellent draping qualities, is now available for institutions, hotels, hospitals, and so on as the result of the Coronizing process for the treatment of glass fabrics developed by the Owens-Corning Fiberglas Corporation. Initial



True glass glass-curtains are fire-safe and durable and have draping quali-

item in the Coronized line of curtain and drapery fabrics woven of Fiberglas yarns is a service weight marquisette curtain material. The treatment gives the material a soft feel and makes it possible to drape it in attractive folds. Ruffles and pleats for criss-cross curtains can be readily made.

In addition to their fire safety, the curtains are shrink-proof. After washing they can be re-hung without ironing, mangling, stretching or framing. The curtains are wrinkle-resistant and do not attract airborne dusts. The Fiberglas Corporation is working with weavers on additional fabric constructions, and with finishers on dyeing and printing techniques. It is expected that the service weight marquisette material will be followed by a light-weight, sheer marquisette, and that gradually there will be developed a complete line of dyed and printed Coronized drapery fabrics.

(Please turn to page 232)

# Industrial Cleaners GENERAL ELECTRIC

SEND TODAY!



Learn all about G-E Heavy-Duty Cleaners

# Economics of ALLEGHENY METAL



Research Results: Especially in acid or salt atmospheres (industrial or coastal areas) Stainless Steel Guy Wire is far better and cheaper than any other type. First cost, installed, is 20% above Material B and 40% above Material C (two commonly-used coated wires) but Allegheny Metal Guy Wire outlasts either of these materials many times over. The very first time that "B" or "C" must be replaced—and this may be necessary as often as every three to five years—Allegheny Metal saves 40% in costs over "B" and 30% over "C"... Plus 40% less weight to handle, transport and store... Plus greater reliability, maximum protection against chafing and impact, and decades of re-use.

Memo: To anyone who uses GUY WIRE on poles, stacks, towers, signs, buildings, etc., ALLEGHENY METAL is best and cheapest in the long run . . . why not investigate it?

Complete technical and fabricating data—engineering help, too—yours for the asking.

#### ALLEGHENY LUDLUM STEEL CORPORATION



The Nation's Leading Producer of Stainless Steel in All Forms

Pittsburgh, Penna. . . . Offices in Principal Cities
Allegheny Metal is stocked by all Jos. T. Ryerson & Son, Inc., Warehouses



Here's a rubber part that's a real time saver. It's a "rubber hand" which, by means of intermittent vacuum, does the work of a human hand in machine milking.

Superior flexing properties are a prime requirement. A mirror smooth interior finish must be maintained . . . pits or rough spots catch milk particles, make cleaning and sterilizing more difficult. The rubber must be highly resistant to butter fat, acids, and sterilizing solutions. And finally, it must not impart foreign taste to the milk.

Continental has met all these strict requirements. The successful production of such intricate parts is typical of the skilled "technical service in rubber" offered by Continental.

When you need rubber parts, why not call on Continental?

#### · This little Booklet will help you.

3 MINUTES reading time will give you a new appreciation of the way in which rubber specialists can help you. Just ask your secretary to write for this factual booklet today.

#### RUBBER WORKS 1983 LIBERTY BOULEVARD . ERIE, PENNSYLVANIA

BRANCHES Dayton, Ohio Detroit, Mich. Hartford, Conn.

Los Angeles, Calif. Lutz, Fla. Memphis, Tenn. Milwaukee, Wis. New York, N. Y. Philadelphia, Pa

Richmond, Va. Rochester, N. Y. St. Louis, Mo.

Rubbe Paris

Be Made

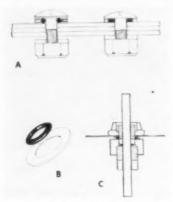
#### METHOD FOR CLEANING BRASS PRIOR TO ELECTROPLATING

A new process for cleaning brass, and for cleaning copper and copper alloys such as nickel, silver and monel metal, prior to electroplating, is announced by Oakite Products, Inc., 22 Thames St., New York, N. Y. The new method embraces the use of combined solutions of two new materials, Oakite Composition No. 91 and Oakite Composition No. 91-A. The first of these materials is a specialized cleaner, and the second is an additive which helps to prevent the formation of tarnish on brass parts and gives the resulting solution excellent chromic acid tolerance. It is stated that combined solution of these materials performs effectively in any of the established precleaning sequences of the plating industry, including (1) direct-reverse current cleaning; (2) soak tank method followed by reverse current; (3) anodic cleaning where only one cleaning tank is available; and (4) cathodic cleaning. Printed matter is available.

#### **NEW SEALING WASHERS**

1 1 1

Lock-O-Seal is name of sealing washer embodying new principle in construction which results in effective positive seal around screws, bolts, rivets, tubing, wires, etc., made by the Franklin C. Wolfe Co., 407 Commercial Center St., Beverly Hills, Calif. The seal is essentially a small

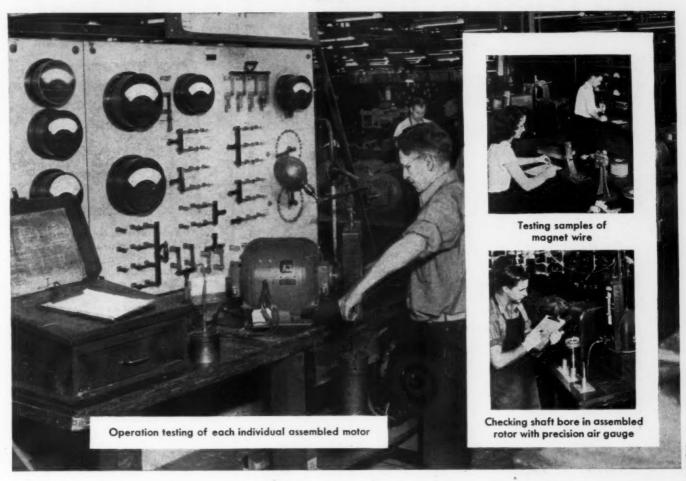


A-Before and after tightening under bolt heads. B—The sealing ring and metal retainer. C-Used to seal tubing passing through a wall.

doughnut shaped ring of scaling material encircled by a washer-like retainer. Under compression the rubber-like sealing material is prevented from being compressed beyond its elastic limit by the metal retainer, thus keeping alive and active. The maker states that the seals will not deteriorate, and have a locking as well as sealing action, and may be reused. They provide the same full metal to metal bearing surface as standard washers, and installation requires no special tools. The manufacturer recommends them for use where a positive seal against gas, air and liquid leaks is required.

(Please turn to page 234)

# QUALIFICATION ... PERFECTION!



# Exacting tests maintain the high performance standards you expect in a motor that's Twingineered

Literally hundreds of tests and inspections are performed on all motor components...to prove their quality anew with each process they undergo. Trained eyes, and a huge investment in specialized testing equipment of uncanny accuracy, enforce Emerson-Electric's philosophy of precision manufacturing, from start to finish. The results show up in the rigid final assembly tests of the completed motor... and in the enviable performance records which Emerson-Electric motors have achieved in a wide range of equipment applications.

Rigid Quality Control is only one of many advantages assured in Emerson-Electric's uniquely successful Twingineering system. Your inquiry is invited.

#### Here's how TWIN-GINEERING "follows through" to give you a money-saving motor drive:

- DESIGN SERVICE: Our "draft board," in consultation with your engineers, plans the best motor drive for your product.
- PRODUCTION: An Emerson-Electric Application Engineer, assigned to each project, directs the writing of specifications and performance requirements, from which production is planned.
- QUALITY CONTROL: Rigid testing is carried out by inspectors in accordance with instructions established by the Application Engineer.
- DELIVERY AND ORDER CONTROL: Adequate facilities allow production of your order on a predetermined delivery schedule, geared to your requirements.
- FIELD LIAISON: Our Territorial Representative provides direct liaison on all phases from inception to final delivery and marketing of the product.

THE EMERSON ELECTRIC MFG. CO., St. Louis 21, Mo. Branches: New York, Chicago, Detroit, Davenport, Los Angeles

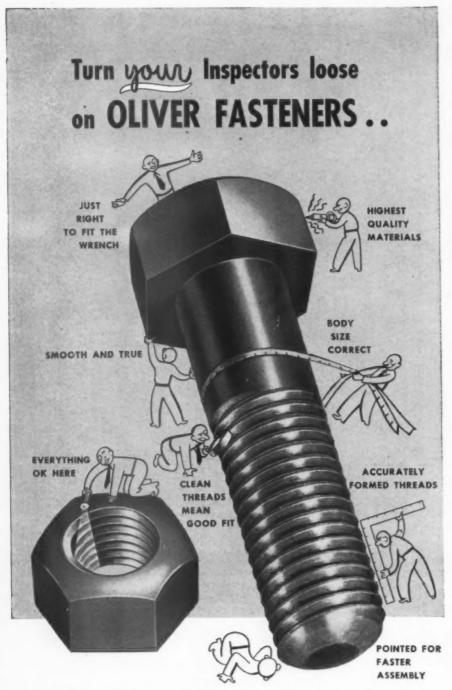


MOTORS · FANS

ECTRIC ELEC

APPLIANCES

MERSON



OLIVER Fasteners meet your most rigid specifications. Made under modern manufacturing conditions by one of the oldest firms in the industry, Oliver combines experience with skill to produce bolts, nuts, rivets and cap screws of highest quality.

For guaranteed satisfaction, specify OLIVER!

#### SEE YOUR DISTRIBUTOR!



South Tenth and Muriel Sts. • Pittsburgh 3, Pa.

#### CIVILIAN WALKIE-TALKIES IN PILOT PLANT PRODUCTION

Portable radio transceivers for use between homes, automobiles, offices, plants, and other person to person radio telephone applications, have been put into pilot plant production by the Citizens Radio Corporation, Cleveland, which has received F.C.C. type approval for equipment to be used on the 465 megacycle band allocated for civilian use.



Citizen's radio station includes complete high frequency receiver and transmitter.

The equipment is about one fourth the size of the wartime walkie-talkie. The transceiver, two of which are required for person to person air contact, is housed in a tiny case measuring 6" x 27%" x 1½" topped by a small folding antenna. This pocket-sized radio station includes all equipment except headphone and batteries carried in a separate case about the size of a miniature camera.

The model 100-B citizen's radio transceiver is for class B stations only, operating at 465 mc., tolerance 0.4, input 3 watts, emission A-3 with 30 % maximum modulation. The transceiver weighs only 11 ounces including antenna, and total station equipment, including batteries, is only  $2\frac{1}{2}$  pounds.

#### # # # MUSIC WIRE DISPENSER CARTON



Packaging of music wire in dispenser type box eliminates inconvenience and wastage of "bulk" coils of wire. Design provides for smooth removal from inside of coil. The line includes wire from diameter of .004 to .180, and each size is available in ½ lb., ½ lb. and 1 lb. cartons. Wire is made of first quality electric furnace steel and conforms to U. S. government accuracy standards. Bulletin available. Precision Steel Warehouse, Inc., 4409 W. Kinzie St., Chicago 24, Ill.

(Please turn to page 236)

# DU PONT ANNOUNCES IMPROVED NYLON BRISTLES

for New and Better Paint Brushes

Now—Du Pont nylon bristles are better than ever before! Improved equipment and production methods, at a new Du Pont plant at Parkersburg, West Va., have made this possible. This plant has special machinery for spinning, drawing and conditioning tapered nylon filament for paint brushes. Special quality controls give maximum uniformity to this higher-standard nylon.

Manufacturers have gained much experience in recent years in the technique of making fine nylon-bristled paint brushes. Today, with this experience and improved nylon bristles, they can make a better paint brush . . . the most economical paint brush you ever used.

#### HOW TO BUY A FINE NYLON-BRISTLED PAINT BRUSH

Professional painters are craftsmen. They demand good brushes. Here's what they look for when they select good nylon-bristled painting tools: 1) Tips should be well sanded to long, thin points—should feel soft to the touch. 2) Sanding should start well back from the tip of the brush. 3) Brush should contain a good blend of nylon bristles of various lengths in a good setting. 4) Nylon should feel firm and resilient when bent by hand. 5) Brush should have the marks of quality construction throughout.

Be sure you're buying genuine nylon-bristled brushes. Look for the word nylon stamped plainly on the handle. E. I. du Pont de Nemours & Co. (Inc.), Plastics Department, Room 843, Arlington, N. J.

#### ADVANTAGES OF PAINTING WITH NYLON-BRISTLED PAINT BRUSHES

- 1. Easy application
- 2. Easy to clean
- 3. 3 to 5 times longer wearing
- 4. Lower cost



#### DU PONT NYLON BRISTLES



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

#### FREE BOOKLET GIVES THE FACTS

It will pay you to look into nylon-bristled paint brushes for your firm NOW. They're made by leading paint-brush manufacturers. Write us for copies of our 16-page illustrated booklet, "How You Can Save Money on the Job with Paint Brushes Bristled with Du Pont NYLON." This booklet is filled with facts on the use, care and economy of nylon-bristled paint brushes.



Tests for Fusion assure waterproof splices

● In test after test, PANTHER and DRAGON Rubber Tapes prove why they make waterproof splices. Successive layers of these tapes readily fuse into a water-tight seal that also gives positive protection against electrical leaks.

This protection is recognized by more and more tape users who ask for — and get — PANTHER and DRAGON. Sold only through recognized independent wholesalers. The Okonite Company, Passaic, N. J.



Panther and Dragon friction and rubber tapes

#### FORK TRUCK FOR HANDLING PALLETIZED LOADS

The Palletruck has been developed by the Salsbury Corp., 1161 East Florence Ave., Los Angeles, Calif., for use where material handling is chiefly palletized. The truck is equipped with two 9" forks, 42" long, spaced 9" apart with tapered forward ends for ease in picking up pallets. A 4" lift is provided for ample



The truck will negotiate any aisle of pallet width, turns in its own length and has 360 deg. maneuverability.

clearance above the floor. The truck is fully articulated to permit the handling of pallet loads over sharply pitched irregularities in floor levels without danger to load stability. Powered by air cooled Wisconsin engine, loads up to 4000 lbs. may be handled on a 15 deg. ramp, while the rotatable turret power unit provides easy maneuverability and constant truck motion without the necessity for gear shifting.

#### WELDING ALUMINUM CANS

The accompanying illustration shows welders adjusting electrode holder and travel carriage for making longitudinal seam weld on five-gallon aluminum cans



A welding speed of 26" per minute is maintained.

in plant of the E. S. MacDonald Company, Montreal, cans being used for the transportation of acid. Two General Electric Type WP insert-arc welders are being used, and the material being welded is type 57-SH aluminum, .032 in. thick. A welding speed of about 26 in. per minute is maintained using 5 liters of argon gas per minute at approximately 60 amperes. Tungsten electrode of 3/32-in. diameter is used. The order calls for 25,000 cans a week over a period of ten months.



#### EMERGENCIES LIKE THIS NEED NOT HAPPEN .

Distributor is your production partner. Need a steel bar or length of shafting . . . to keep production rolling—to stave off a temporary shutdown? Pick up your phone and call him—for one bar or a truckload.

His entire organization is geared to emergency service; and his stock is complete, diversified and classified for quick and accurate handling. From the moment you pick up your telephone to the arrival of the order at your receiving dock—it is usually only a matter of minutes.

But prevention is far better than cure. These emergencies rarely happen—when you make full use of the Union Drawn Distributor's inventory as your normal supply line. Phone him today and ask him how you can share his stockpile—as much as you need, when you need it:





#### cutting costs --- with a dotted line

Day after day, this typist turns out almost twice as many statements, invoices, purchase orders, as before. Office overhead is slashed. How? The dotted line does it. That magic dotted line holds together sets of Moore's continuous forms. Work flows in an unbroken stream through typewriter, billing or tabulating machine.

Moore continuous forms bring assembly-line speed and economy to your office — save up to 95% of the

time wasted by old-fashioned methods.

For a medium-size newspaper in Michigan, Moore designed continuous interleaved invoices that speed up the work and can save about \$3600 each year in postage and envelopes alone! Your business can shave costs, too. Call your local Moore office—in over 200 cities, nearly everywhere. Or write any Moore factory: Niagara Falls and Elmira, N. Y.; St. Paul, Minn.; Denton, Tex.; Los Angeles and Emeryville, Calif.; Salem, Oregon. Also sales offices and factories across Canada.

# MOORE

BUSINESS FORMS, INC.

The only national company that offers a complete range of modern business forms — THE RIGHT BUSINESS FORM FOR EVERY FORM OF BUSINESSI















Continuous Register Forms and Register

Fanfold Billing Machine Forms

Typewriter Forms

Marginal Punched

Sales Books for Every Business Operation

Speedisets for Fast Carbon Extraction



Purchasing Agent A. J. Tailby of the A. P. W. Products Company, Inc., Albany, New York, manufacturers of towels, toilet tissue and other hygienic products, supplied the accompanying forms for use in the monthly Forms Forum of forms used by Purchasing Departments.

The lot includes purchase and stores requisitions, purchase order, inventory card, and stores record card.

One of the features of the Purchase Order form, which is prepared in quadruplicate, is that the purchasing department copy is on bristol stock. This is filed alphabetically by vendor names.

The reproduction to the right is of the vendor copy (white), with reproduction of the lower section of the receiving department copy (green), and copy for the requisitioner which is on pink stock.

A. P. W. PRODUCTS COMPANY, INC.

POST-OFFICE BOX III

ALBANY 1, N. Y.

COMUNITIONS

TO Actual size 8" x 6"

STONEROOM

MILL NO 3 EAST DOCK

DATE

CONDITIONS

SHIP VIA

CONDITIONS

DATE

CONDITIONS

SHIP VIA

CONDITIONS

DATE

CONDITIONS

FACTORY OFFICE SCHEMANY, INC.

DATE

CONDITIONS

SHIP VIA

CONDITIONS

DATE

CONDITIONS

SHIP VIA

CONDITIONS

FACTORY OFFICE

STONEROOM

DATE

CONDITIONS

A. P. W. PRODUCTS COMPANY, INC.

CONDITIONS

FACTORY OFFICE

STONEROOM

DATE

CONDITIONS

FACTORY OFFICE

STONEROOM

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

DATE

CONDITIONS

FACTORY OFFICE

STONEROOM

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

DATE

CONDITIONS

FACTORY OFFICE

STONEROOM

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

MILL NO 3 EAST DOCK

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

MILL NO 3 EAST DOCK

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

MILL NO 3 EAST DOCK

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

CONDITIONS

FACTORY OFFICE

STONEROOM

MILL NO 3 EAST DOCK

MILL NO 3 EAST DOCK

CONDITIONS

FACTORY OFFICE

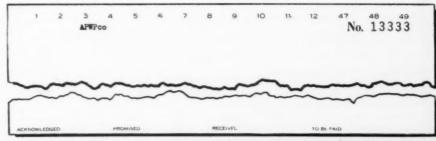
STONEROOM

MILL NO 3 EAST DOCK

MILL NO

Actual size of purchase order is 8" x 6". Place of delivery is indicated by check in upper right corner.

Purchasing department's copy of the purchase order on bristol paper stock. The figures 1 to 12 denote the months of the year, and the figures 47, 48 and 49 denote calendar years. These numbers are for tab guide locations in follow-up.



Purchasing department's bristolboard file copy is 8" x 6"—the same as the purchase order.

(Please turn to page 240)

(Continued from page 239)

Stores Requisition. It provides for debit or credit data, description of material, code, quantity and unit price. The upper righthand corner carries check spaces for indicating that the charge has been entered in stock records and summary.

ENTERED ON	DATE	CR	EDIT	1 0	EBIT
STOCK RECORDS		3-3-			
ENTERED ON SUMMARY	6" x 4"	3-3-			
0	ESCRIPTION	CODE NO	QUANTITY	UNIT PRICE	AMOUNT
					-
			1	+	-
			1		
FOREMAN'S O. K.					-
990ED		RECEIVED			

VERED

The purchase requisition is made in duplicate, second copy being retained by the person ordering the material.

The form is  $5\frac{1}{2}$ " x  $8\frac{1}{2}$ " in size. It provides for complete information as to job and department, and account to which material is to be charged, also amount now on hand and source of supply.

Space is also provided for purchase department approval, the purchase order number and date.

TERMS FOB. SHIPPING DATE

ROUTE SHIPMENT VIA

HOW MUCH NOW ON HAND?

ORDER FROM

ADDRESS

REQUEST APPROVED BY

PURCHASING DEPARTMENT

O. K. ORDER NO DATE

Below: One of two forms used for recording receipts, withdrawals and calculating balance of material on hand. A similar form is used by the Purchasting Department for inventory control of those items for which it is responsible.

(Please turn to page 242)

PORM MA-122			30	2/1/4	x 68					1	WHERE	USED				
AX.	MIN.				RI	ECEIPTS				WITHDR	AWAL	S		BALAN	NCE	
	VENDOR	DAREG	00050	DATE	QUARTITY	AMOUNT	FREIGHT ERP. P.P.	COST	DATE	QUANTITY	COST	AMOUNT	DATE	QUANTITY	UNIT	AMOUN
					1									1		
<b>&gt;</b>		<b>~</b>	$\Rightarrow$	<b>*</b>	~		$\approx$	$\stackrel{\sim}{=}$	2	$\sim$		<b>*</b>	2	$\approx$		>

#### How Your Office Staff

# Can Produce More Work With Less Fatigue!

A LERT executives are discovering that correct seating pays off in better work—and more of it! Bad seating bears directly on slow work, needless errors and high absenteeism. Scientifically designed chairs conserve energy, supporting the body where it needs support. Adjustable to user's height and desk height, modern wood posture chairs allow both feet to rest firmly on the floor. Elbows rest naturally. Back and seat follow body contours.

Handsomely finished to match the beauty of wood office desks, new posture chairs for general office personnel or executives will enhance the appearance of your office while stimulating better work. See your office furniture dealer today for a free demonstration.





Co. COMMERCIA	TURE CO. • HIGH POINT DESK CO.  DESK CO. • IMPERIAL DESK CO.  CHAIR CO. • JASPER DESK CO.  JASPER SEATING CO. • THE I  CO. • MYRTLE DESK CO. • NE	LMA DESK CO. • CLEMCO DESK  TON DESK CO. • GUNN FURNI-  DING & CHAIR CO. • HOOSIER  . • INDIANA DESK CO. • JASPER  • JASPER OFFICE FURNITURE CO.  LEOPOLD CO. • MURPHY CHAIR  W INDIANA CHAIR CO. • WELLS
Sun in Product them Sign's by Groung James and an Jah- by Groung James and an Jah-	If you're not works	ing over wood. you're overworking
CS	WRITE for interesting fr Work By Sitting Down On attach coupon to your bus	ree booklet "How To Produce More 1 The Job—CORRECTLY." Simply iness letterhead.
Wood Of	ffice Furniture Institut	e

Wood Office Furn Suite 15 730 Eleventh St., Send posture cha	N. W., Washington 1, D. C.
Name	
Address	ZoneState
City	

DESCR	IFTION	APTRO	io		8* 3	50				MIN		ORDER.		
		1	QUANTIT	4			1	QUANTITY	Y	1	ORDER		QUANTITY	
DATE	ORDER	REC'D	WITHOR.	DAL	DATE	ORDER	REC D	BOHTIW	BAL	DATE	OwDER	MEC.D	WITHOR.	BAL

Stores Record Card. This is the storekeeper's record of material on hand. It is used to automatically re-order material when quantity reaches a predetermined level.

#### EDWARD, E. FORD ELECTED A DIRECTOR OF IBM

Edward E. Ford of Daytona Beach, Fla., was recently elected a director of International Business Machines Corp., New York. He is the son of the late A. Ward Ford, one of the founders of the company.

Announcement is also made by IBM of the appointment of Edmund C. Thompson as assistant to the IBM manager of customer engineering with headquarters in New York. He previously was manager of customer engineering in Kansas City.

#### NAMED SALES PROMOTION MANAGER OF EBERHARD FABER

Franklyn H. Eichhorn has been appointed sales promotion manager in addition to his duties as advertising manager



Franklyn H. Eichhorn (Bachrach photo)

of the Eberhard Faber Pencil Company, 37 Greenpoint Avenue, Brooklyn, New York. The sales promotion department is a new one for the company.

#### PAUL B. BUCKWALTER NAMED VICE PRESIDENT OF NATIONAL BLANK BOOK COMPANY

Paul B. Buckwalter has been elected vice president of the National Blank Book Company, Holyoke, Mass., and western division manager, W. Brewster Towne, son of president Joseph M. Towne, has been named a director of the company. Mr. Buckwalter has been with the company 26 years. In 1943 he was made general sales manager. Mr. Towne, after

release from naval service in the fall of 1945, was sent to Chicago where he was in charge of general operations, becoming western division manager in charge of sales and plant operations in 1946.

#### METAL REINFORCED BINDER SHEET PROTECTORS

Transparent acetate sheet protectors,  $8\frac{1}{2} \times 11^{\prime\prime}$  with three holes protected by metal eyelet reinforcements on  $4\frac{1}{2}^{\prime\prime}$  centers for standard two or three ring binders, are announced by The Amberg File & Index Co., Kankakee, III. The acetate sheets are also punched on  $6\frac{1}{2}^{\prime\prime}$  centers (without eyelets) to fit other type binders. Black mounting is included with each transparent acetate cover. The company also announces that protector sheets for presentation brochures, salesmen's catalogs, training booklets, etc., are available on special order.

#### MAILING LISTS MIMEOGRAPHED ON GUMMED PERFORATED SHEETS

Mailing list addresses may now be mimeographed on gummed, perforated label sheets by the use of new addressing stencil sheet announced by the A. B. Dick Company, 720 West Jackson Blvd., Chicago 6, Ill. This special stencil sheet has guide lines which correspond to perforations on special gummed paper. One address is typed in each space (33 spaces to a stencil sheet), the stencil is attached to the mimeograph and sufficient copies for anticipated mailings are produced. The gummed paper is then separated into strips and one mimeographed address is attached to each mailing piece. The stencils may be filed for re-runs.

#### STRATHMORE NEW BUSINESS SHEET

The Strathmore Paper Company, West Springfield, Mass., announces the addition of a new fine paper named Courier to its lines. Courier is natural white, comes in three weights (basis 70, 80, and 80 — 2 sheet), to use alone or in combination of cover and text. The new sheet is said to be unusually responsive to fine offset lithography and letterpress printing.

#### BUSINESS AND ACCOUNTING RECORDS CATALOG

Announcement is made by the National Blank Book Company, Holyoke, Mass., of a comprehensive catalog covering "Business and Accounting Records." Containing 100 pages, the catalog details and legibly illustrates the company's complete line of widely used records.

It has been designed to help users make quick, easy selection. The forms have been reproduced in color.

The price of the book is \$1.00 per copy, and it may be obtained from dealers or direct from the company.

#### OLD TOWN APPOINTS PITTSBURGH DISTRICT DISTRIBUTORS

Hamilton Brothers, 1004 Columbia Building, Pittsburgh 22, Pa., have been appointed exclusive distributors in Pittsburgh and surrounding counties, by the





H. R. Hamilton and J. H. Hamilton

Old Town Ribbon & Carbon Co., Inc., of Brooklyn. The company, which has long been active in the spirit duplicating supply field in Pittsburgh, will carry a complete assortment of Old Town Products.

#### ROYAL NAMES WHERRY DISTRICT MANAGER AT WORCESTER

William M. Wherry, formerly salesman for the Royal Typewriter Company at Boston, has been promoted to the position of district manager at Worcester.

#### PAPER INDUSTRY IN SOUND BASIC POSITION

Much of the important production expansion undertaken in the pulp and paper industry since the end of the war has now been completed and this added capacity, together with a leveling off in national income, served to effect a closer balance between supply and demand for paper and paper products in the closing months of 1948, says Roy K. Ferguson, president of St. Regis Paper Co., New York.

Production of paper and paperboard in 1948 reached an estimated record level of 22,150,000 tons and outturn this year may be expected to move with the general level of business.

Completion of the post-war adjustment finds the paper industry in a sound basic position. Fuller integration, limiting factors on unsound expansion and steadily

(Please turn to page 244)



• In these days of scrambling for available commodities to keep your business in profitable operation, proper purchasing records are vitally important. Kardex *visible* commodity purchase records give you all pertinent facts *immediately* — help you purchase wisely and economically.

Purchase routines are dramatically speeded up when you can make out orders right from the factual summaries in this one centralized record; for example, Kardex gives you, without digging through files:

Complete, detailed specification record of each item;

Up-to-date list of vendors;

Complete record of orders placed, showing quantity, discounts, shipping point and prices;

Noted information on fulfillment of shipping promises and condition of material received.

Exclusive Kardex signal control puts the spotlight on obsolete items, surplus available, contract items and items that can be advantageously purchased in combination with others.

Kardex Visible Commodity Purchase Records are centralized for speed, for economy, for accuracy: they help you get "on top" of the purchasing situation, and stay there!

Send today for <u>Purchasing Department Records</u> and <u>Routines</u>—detailed presentation of modern, <u>simplified</u> wisible and other purchasing record systems for all phases of commercial and industrial purchasing. Here are just a few of the important subjects covered in this exhaustive booklet:

Index to Vendors • Vendors Purchase Record • Contract Records • Make and Hold Records • Vendors Catalog File

Write Systems Division, 315 Fourth Avenue, New York 10, New York.



Copyright 1949 by Remington Rand Inc



THE FIRST NAME IN BUSINESS SYSTEMS



"I want to talk to you! About the smoothest, speediest filing system this office ever had with that SEA FOAM BOND you recommended...



"For streamlining our office system . . . for getting us a thin business paper that comes clean with erasures — and even makes 14 clear carbons in one typing. The girls love it.



"SEA FOAM'S thinness cuts our file space in two . . . and every sheet stands up, findable, in the files. It really likes hard handling, too. You're the

BEST P. A. WE'VE EVER HAD!



#### America's Favorite Lightweight Office Paper

Sold by leading paper merchants and stationers nation-wide.



(Continued from page 242)

widening end uses for paper are among the constructive factors.

St. Regis Paper Company net sales for 1948 established a new peak at approximately \$160,000,000. During the year the company practically completed its current broad program of expansion and modernization and is now in a position to meet expanding demands of its customers, to explore and develop new markets and to meet the more competitive conditions which may be ahead.

#### L. C. HULT NAMED WESTERN SALES MANAGER FOR ROYAL

L. C. Hult has been named Western Sales Manager for the Royal Typewriter Company, succeeding the late A. W. Barlow, with headquarters in the Colorado



L. C. Hult

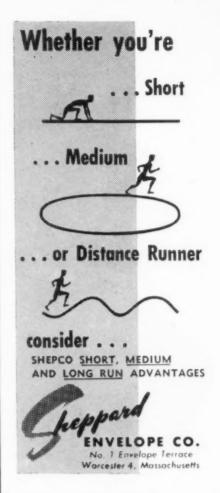
Building, Denver, Colo. Because of the illness of Mr. Barlow, Mr. Hult was named Acting Western Sales Manager last summer. He has been associated with Royal since March 1933.

#### + + + NEW POSTAL SCALE



This is new postal scale introduced by the Hanson Scale Co., Chicago, which features marblized finished Lustron plastic case. A friction lock holds the adjustment thumb screw when setting pointer to zero, and scale stays in balance though used constantly. The dial shows new postage rates in effect January 1, 1949, and registers exact postage in dollars and cents for air mail, first class, and merchandise by zones. It is graduated in ounces up to its capacity of two pounds.

(Please turn to page 246)



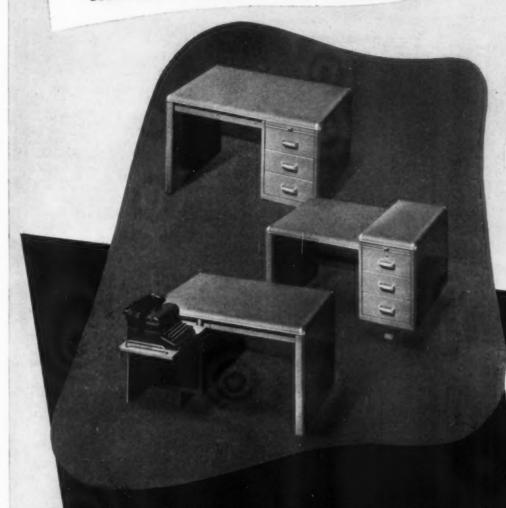


# The Finest Address in Maryland

Faultless service, 700 inviting, clean rooms, superb Chesapeake Bay sea food, a welcome that lasts . . . and genuine, old-fashioned hospitality . . . all contribute to making the largest hotel in Baltimore the finest address in Maryland.

Jord Baltimore Hotel
BALTIMORE 3. MARYLAND

# introducing the CRESTLINE 46" Desks



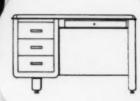


MSFR-46 FLAT TOP



MTFBR-46 FIXED BED

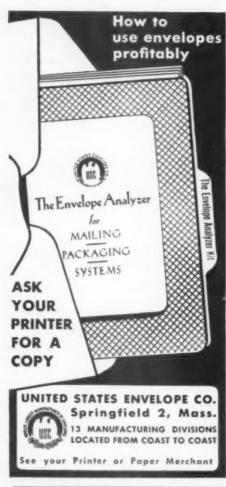
To that expanding line of finer office furniture there is now added the CRESTLINE 46" group with all the exceptional CRESTLINE features... Litetone finish... 29" Height... 32" Depth... Eye-ease Top... New Feather-touch foldaway mechanism in the 46" typewriter desk... True-edge Trim... Full Roll Edge... PLUS the functional efficiency and matchless good looks that have made CRESTLINE the choice of the men who buy today with their eye on many tomorrows.

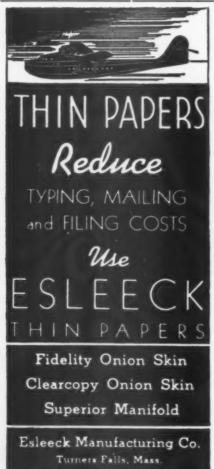


MTFL-46 FOLDAWAY



SECURITY STEEL EQUIPMENT CORPORATION, AVENEL, N. J.





#### GRAY MAGIC TYPEWRITER ANNOUNCED BY ROYAL

A new office typewriter model, known as the Gray Magic Royal, has just been announced by the Royal Typewriter Co., Inc., 2 Park Ave., New York, N. Y. The color is a soft gray tone. The new typewriter introduces on office machines, the



uniquely shaped "finger-flow" keys with flat front edge and concave surface, which offer extra clearance between key rows. Other features include an easily removable cylinder, non-slip paper feed, and a newly designed line space saver. The new machine is said to present a new peak in typing ease and mechanical precision.

#### PROTECTIVE FILM MAKES STENCIL CUTTING EASIER, FASTER

Film protected stencil called Protect"O"Film, is being marketed by The Heyer Corporation, 1850 South Kostner Ave., Chicago 23, Ill. The clear protective film covering is said to make stencil cutting easier, faster and better. The loss of the centers of "o" and "e" due to excessive pressure or sharpness of type-writer characters is claimed to be prevented, and the film keeps the letters in place so that a stencil produces uniformly perfect copy. Corrections are made without removing stencil from the typewriter.

#### NEW CALCULATING MACHINE STAND



New business machine stand, known as the Hercules Calculating Machine stand of tubular steel design, is announced by the Meilink Steel Safe Co., Toledo 6, Ohio. The over all size is 24" x 54". It is constructed of heavy gauge tubular steel with all welded joints, and maker claims that it is vibration free. One rubber-mounted work tray and one easy sliding drawer are optional equipment. The stand is available in black, grey or green wrinkle finish.

(Please turn to page 249)

# CLEVELAND

NEW
VISIT THE HOLLENDEN...
COMPLETELY REDECORATED!

- \* 1000 ROOMS WITH BATH
- \* RADIO IN EVERY ROOM

It's

tive

tack

uses

insu

prec

- \* SIX FINE RESTAURANTS
- \* CENTRAL DOWNTOWN LOCATION
- \* GARAGE ATTACHED

#### HOTEL HOLLENDEN

Robert P. Joyce, General Manager



Home of the famous Vogue Room

#### Our NEW

Reader Service will save you a lot of letter writing!

You of course want many of the latest catalogs and bulletins mentioned in the:

Advertisements,

"Ask Purch" Pages,

New Products Section.

Simply list your wants on the Postage-Paid Reader Service post cards on pages 19 and 20.

Try it this month. Use the service every month. No charge. It's an easy way to keep your catalog an information files

UP-TO-DATE

Now...add the magic of color to your desk with the famous



... and Swingline JEWELTONE Staplers give you the extra beauty of color at no extra cost!

# It's New! It's Pointed! It's Extra-Sharp!



Swingline's new SPEEDPOINT Staples make for easier, faster stapling!



The new SPEEDPOINT staples give better performance to your Swingline Stapler. SPEED-POINT extra-sharp staples even penetrate wood, light sheet metal and 40 sheets of paper. SPEEDPOINT clinches 100-and-1 household and office stapling problems. No buckling, no jamming, because SPEEDPOINT staples are made with 100% round wire for strength, and pointed for penetration. For your Swingline Stapler, or any standard stapler, ask your stationer for the new Swingline SPEEDPOINT 100% round wire staples.

Swingline STAPLES

#### NEW DUPLICATOR CABINET

Illustration shows a new all-steel cabinet developed by the Wolber Duplicator & Supply Co., 1201 Cortland St., Chicago 14, Ill., for their electrically and manually operated liquid duplicators. The cabinet is of convenient working height, 32½", with top surface of 17" x 26".



It has two pull-out shelves, one at each end of top, giving a working space 17" x 50". Two doors are provided with hinges of semi-flush construction and spring lock. Storage space is 16" x 26" x 29" high. The cabinet is available in gray Hammerloid and black crinkle.

#### VICTOR RE-INTRODUCES TWO PORTABLE ADDING MACHINES

Victor Adding Machine Co., 3900 N. Rockwell St., Chicago 18, Ill., has reintroduced its seven-colume totaling capacity portable models. Designated as the 6-6-0 (full keyboard) and 7-6-0 (10-keyboard), the machines were not manufactured during the war while the company was engaged in making the Norden bombsight.



Full keyboard model

Both models, size 12" by 71/8", are hand-operated with listing capacity of 9,999.99 and totaling capacity of 99,999.99. Included in the features of the two models are the snap-on plastic case; off-the-keyboard control keys for total-sub-total and repeat; natural reading angle keyboards; light touch, cushioned keys; cadmium plated metal parts; one hand control with short handle pull and no desk travel; printing press action; one stroke total; and simplified parts movement.

(Please turn to page 250)

What if
your secretary
had
your job?



You can bet "your P.A. job" she'd know what carbon paper to buy because she's an expert.

She realizes that the right choice of carbon paper is vitally important to her efficiency. Chances are she prefers Webster's Micrometric Carbon Paper — the only carbon paper with the numbered scale. It warns her when she approaches the bottom of a page . . . assures neater spacing of letters . . . results in faster work. Micrometric's "clipped corner" permits easy removal and keeps hands clean.

Yes, Mr. P.A., your secretary would buy Micrometric because it costs no more than any other quality carbon paper. Besides, it helps her do a better job for you.

Factory warehouses from coast to coast mean quick delivery of Micrometric and other Webster products to over 2000 dealers — and to you. So order "Webster's" the next time you want carbon paper or typewriter ribbons; duplicating carbon papers and accessories; ribbons and carbons for Elliott-Fisher, Addressing, Adding and International Business Machines. Consult your nearest dealer, or write to F. S. Webster Company, 7 Amherst Street, Cambridge 42, Mass. Warehouses in New York, Philadelphia, Pittsburgh, Detroit, Chicago, San Francisco.

Better buy ...

#### **WEBSTER'S**

MultiKopy
Micrometric Carbon Papers
and Typewriter Ribbons

#### Take a Tip

25,000
INDUSTRIAL BUYERS

Conorer-Mast
PURCHASING
DIRECTORY

LIES BUILDING
DIRECTORY

LIES BUILDING

DIRECTORY

LIES BUILDING

DIRECTORY

LIES BUILDING

DIRECTORY

LIES BUILDING

LIES BU



Every year 25,000 copies of Conover-Mast Purchasing Directory are delivered to industrial buyers. And they use it regularly because it's a specialized buying directory designed and built for production, purchasing, and engineering executives. It's easy for them to secure sources of supply for all equipment and products used by industry.

Compact, complete, yet easy to handle—that's the Conover-Mast Purchasing Directory. Use it, and you'll find it's the quickest way to all the information you need.



If your office does not have a copy of the CONOVER-MAST PURCHASING DIREC-TORY fill out and return the coupon below.

# Conorer-Mast PURCHASING DIRECTORY

Formerly Plant Purchasing Directory

737 N. Mich Chicago 11,		Directory
a copy of the rectory, we v	e Conover-Ma	Company received ast Purchasing Di- use it in our indus- erstand, is our only
obligation.	Inat, we unde	
obligation.  Name	Anat, we und	Title
obligation.	mat, we under	
obligation.  Name	mat, we und	

#### CORRESPONDENCE STAPLE EXTRACTOR

The accompanying illustration shows new staple remover for removing staples from correspondence units and filing units, marketed by Speed Products Company,



manufacturers of the Swingline office accessories and supplies. The new unit is known as the Staple X Tractor, the name having been suggested by a Los Angeles stationer.

#### DIRECT VISION SORTERS

Resumption of the production of Sort-O-Mat Direct Vision paper sorters, is announced by the Yawman and Erbe Manufacturing Co., Rochester 3, N. Y. The unit is a vertical sorter, and as the papers stand on edge, it makes for considerable space saving. Alphabetic sorting is done at one time to the first two letters of each name.



This is said to be generally sufficient except where large volume sorting is done. A second time through sorts to the fourth letter. Other types of guiding provide for subjective, numeric, geographic or special combination sorting. Another feature of the unit is an automatic expansion feature that eliminates frequent "time out" for manual adjustments. Further information in regard to the sorter is available upon request.

#### 1 1 1 CANCELLED CHECK CABINET

The cancelled check cabinet was recently announced by the Cole Steel Equipment Co., 285 Madison Avenue, New York, N. Y. The fourteen drawers of the cabinet will house several years of cancelled checks, it is said. The cabinet is 23½" wide, 37½" high, and 24½" deep. Inside drawer sizes are 10½" wide, 4½" high, and 24" deep.

(Please turn to page 252)





# bring your layouts to life: print on...HUDSON GLOSS

Already printers are demanding HUDSON GLOSS—the newest
International Mill Brand printing paper! Here's a real economy value
in a process-coated book paper. It performs exceptionally well
on flat-bed or rotary presses; in single or multi-color printing
(using 110-120 screen halftones) of catalogs, broadsides, booklets and
other advertising literature. International Paper Company,
220 East 42nd Street, New York 17, N. Y.



#### INTERNATIONAL PAPERS

for Printing and Converting



At 9 out of 10 of the largest and most important decision points in American industrial purchasing, MacRAE'S BLUE BOOK is used as a reference source "principally" or "exclusively."

Rising Paper Company, Housatonic, Mass



#### NEW DIEBOLD OFFICE SAFE

Here is new safe announced by Diebold, Inc., Canton, Ohio, in Guardian line, which carries Class "C" tested fire rating from the Underwriters' Laboratories and the Safe Manufacturers National Association, and complies with the U. S. Bureau of Standards' specifications.



Handle and dial are located high on the door for convenience of user.

Though designed primarily for fire protection, the safe also bears the Underwriters Laboratories' approved relocking device label. A three-tumbler, key changing combination lock secures the door and permits the owner to reset the lock to any desired combination at will. The door has a swing of 270 degrees. The line is featured by a chroma-gray fine-wrinkle finish.

#### FILING CABINET FOR BLUE PRINTS AND DRAWINGS

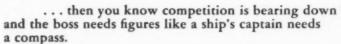


The Draw-In-Dex is name of cabinet for filing blue prints and drawings, being marketed by the Empire Development Corp., 209 Union Trust Bldg., Washington, D. C. It will accommodate up to 1,000 prints any of which can be removed or replaced without disturbing the others. The cabinet measures 20 x 30", x 4' high, and is constructed of steel. Suspension rods on hinges hold the drawings, and when the front panel is opened, the rods slide apart in such manner that the prints are easily removed or inserted in their indexed positions.

(Please turn to page 254)

When your management says,

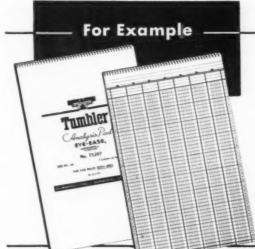
# Jwant it Accurate Accurate and Right Now



You'll find National has developed feature after feature for record-keeping items that will help you and your record-keeping departments meet demands like this day after day, accurately and fast.

Complete information on National's business records are available. Call your stationer or write direct for our new 100-page catalog "Business and Accounting Records." \$1 a copy. It will help supply your management with accurate records—faster.





# Accurate, Faster Analysis with National's New T5200 Line of Tumbler Pads

- Numbered lines and numbered columns permit accurate analysis without a second thought.
- 2. Alternate brown and green ruled columns make each class of figures stand out...increase posting accuracy.
- 3. Tumbler\* Bound for fast, easy turning of sheets. Each sheet perforated for easy removal.
- 4. Printed on EYE-EASE\* paper . . . famous for increasing speed and accuracy.

\*Trade Mark Reg. U. S. Pat. Off.

Depend on National

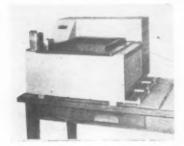
for Record-Keeping Items that Help You Provide

Accurate Records— FAST

NATIONAL BLANK BOOK COMPANY, HOLYOKE, MASS. New York Chicago Boston San Francisco

#### TABLE MODEL PAPER SHREDDER

Confidential paper, waste paper, etc., can now be converted into unrecognizable shreds by being fed into a new table model shredding machine announced by Shredmaster Corp., Brooklyn 5, N. Y.



The input side of the table model Shredmaster, showing the 3-position control which provides forward stop and inching reverse.

The machine is noiseless, has a 14-inch throat and a one hp reversing motor which can be plugged into any lighting outlet. The paper is shredded lengthwise with the feed into 1/16" widths and any desired multiples at capacities up to 600 lbs. per hour.

The maker states that the table model can be used to shred sheets, rolls, small pieces, crumpled waste, newspaper, wax paper, tissue paper, pass books, cards, labels, tickets, transfers, premium packages and a variety of non-paper materials including foil and cellophane.

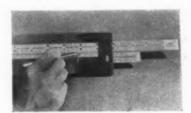
# ADDRESSING MACHINE FOR SMALL MAILING LISTS

Small addressing machine that will address up to 20 envelopes, cards, labels, statements, etc., per minute, without plates or ribbons, is announced by Vern Cunningham, 1463 E. 50th St., Chicago 15, Ill. It is especially practical where mailing list may range from 25 to 2000 names. Instead of using plates or stencils, the device prints from a master tape. The tape is like an ordinary roll of paper on which addresses are written by a typist. This master tape is said to be good for 100 mailings, that is, it will imprint each address up to 100 times. Printed matter available.

# SIMPLE PAYROLL CALCULATOR

A new time-saving calculator that computes accrued, elapsed payroll time by a simple manual operation is announced by Time-Tab. Inc., 2525 Fruitland Ave., Los Angeles. Called the *Time-Tab*, its purpose is to speed and make more accurate the compilation of workers' time, whether recorded by time clock, time sheets or time-keeper.

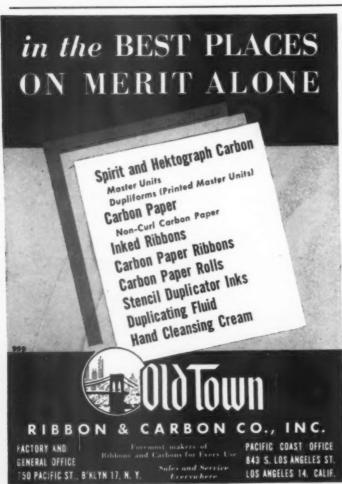
According to the manufacturer, pretesting of the *Time-Tab* in stores, offices and plants showed a 500% time saving over former systems, as well as a sharp reduction of the inaccuracies of written or mental calculation. The *Time-Tab* is a two-ruler calculator based on the slide-rule principle which is housed in a triangular case measuring only 20 inches long and three inches high. The sliding rules are divided into hourly segments representing a full 24-hour day to allow for overtime pay reckoning. Hours are further divided into minutes.



Each calibration has a corresponding opening by which the operator, by means of a stylus, moves the rulers to the extreme right. The top ruler is moved for all "in" times, and the lower one for all "out" times. An entire working day is computed by one continuous operation. After the last "out" time has been set, the day's net working time appears in the answer window. Full weight of the Time-Tab is 40 ounces. Construction is of wood and aluminum.

# AUTOMATIC COLLATING MACHINE

An automatic collating machine, which is claimed to solve the primary problems of collating through a simple basic design, is announced by Reproduction Prod-





ucts Company, 1714 N. Damen Ave., Chicage 47, Ill. Its working principle is best visualized as a vertically revolving wheel or drum composed of 50 bins or compartments into which duplicated sheets are fed automatically. Each compartment is of 100 sheet capacity and as each sheet is fed, the synchronized drum moves one position, automatically sorting the duplicated copies. The sorting rate is given as 85 sheets per minute, or 5100 per hour and the machine is equipped with automatic stop making it possible to collate any predetermined number of books up



Sorting rate of the machine is 85 sheets per minute.

to 50. Based on an estimated speed of 540 sheets per hour average for hand collating, the machine makes for a savings of time in excess of 75%, along with the elimination of the human-error factor.

# STEEL BLUEPRINT CABINET

A new blueprint cabinet built of heavy gauge furniture steel has been introduced by the Cole Steel Equipment Co., Inc., 285 Madison Ave., New York 17, New



Automatic plunger-type lock controls five drawers.

York. The cabinet features smooth gliding drawers on ball-bearing rollers, and is equipped with a lift compressor in the front of the drawer and a hood in the rear to prevent filed material curling, creasing or tearing. The cabinets come in olive green or gray crinkle finish. Two sizes are available, one with inside drawer dimensions 37" x 25" x 2½" high, and a larger one with inside drawer dimension 43" x 32" x 2½" high. The fivedrawer units are readily stacked, and a 7½" high base is available.

# 011e form

does the
work of many
when it's a <u>combined</u>\*form

# a UARCO business form

Just because you have many departments doesn't mean you need many forms. Not at all! Uarco combines business forms so that one does the work of many . . . serving all departments . . . reaching everyone concerned.

Not only that, but each department gets only the facts it wants—no non-essentials. No delays, no recopying—one writing does it all!

See how you can combine your business forms. Call your Uarco Representative —he'll make a complete survey of your needs at no cost or obligation.

# UARCO INCORPORATED

Chicago, Ill.; Cleveland, Ohio; Oakland, Calif.; Deep River, Conn. Offices in all principal cities



\*for instance... One company selling radio transcriptions needs all these with each order: (1) box label, (2) shipper's receipt, Railway Express Agency, (3) R.E.A. label with detachable delivery sheets, (4) "abstract advice" for R.E.A. records, (5) shipper's bill from R.E.A. UARCO combines them all in E-Z-Out Form. One form... One writing... copies detached in one swift motion.



Business Forms



CONTINUOUS-STRIP FORMS
FOR TYPEWRITTEN AND DUSINESS MACHINE RECORDS



SINGLE SET FORMS



# Among the ASSOCIATIONS

# New York Members Visit Worthington Plant



A large group of members of the Purchasing Agents Association of New York visited the plant of the Worthington Pump and Machinery Corporation at Harrison, N. J., on January 27.

Following luncheon in the company cafeteria, the visitors were conducted in small groups through the huge Worthington installation, with particular emphasis being placed on the modernized foundry, which, during 1948, gradually changed over to a mechanized operation. The program will ultimately make the Harrison Works foundry the most modern in the east for its type of work, according to company officials. The purchasing agents saw how the cupola operation in the iron foundry has been improved with the installation of new centrifugal blowers. new green sand handling, mold drying ovens and core drying equipment.

Company officials, acting as guides, pointed out how the core room has been mechanized, together with a new dry sand system in the main foundry. Five storage bins in the core room are filled from an outside source through conveyor belts and elevators. This source will take either wet or dry sand—the wet sand being dried by a furnace before being elevated to the bins. This means a saving by the reclamation of a large part of the sand formerly discarded.

The officials stated that they expect

The officials stated that they expect early completion of final improvements in the foundry modernization program, which will result in improved quality and in speeding up the handling of castings.

Other parts of the plant visited were the machine shops, engineering department,

fabricating department, special products department, laboratory, and power plant. Among the company officials welcoming the purchasing agents were C. Reynell, General Manager of Purchases and Traffic; F. W. Thomas, Assistant General Manager of Purchases; G. F. Guldner, Purchasing Agent, Harrison Works; C. G. Tramer, Purchasing Agent, Dunellen Works; C. K. Hood, Manager of New York District Sales Office; and J. Matullo. New Jersey sales.

# RELATION OF ENGINEERING, PURCHASING, ELMIRA TOPIC

1 1 1

The regular meeting of the Purchasing Agents Association of Elmira was held in the Terrace Room of the Mark Twain Hotel on Thursday evening January 27.

Speaker of the evening was Professor Harry J. Lobert of Cornell University, whose subject was "Relation of the Industrial Engineer to Purchasing".

Moore Business Forms, Inc., of Elmira, presented an exhibition of their products. Two movies were shown on the activities of the Federal Bureau of Investigation and the "T" men of the United States Treasury Department.

Fifty four members and six guests were

# Chicago Women's Group Executives' Night



At the speakers' table, left to right: Walter Auburn, editor of "Chicago Purchasor"; Walter Armstrong, second vice-president, Chicago association; Ruth Dux, treasurer, Women's Division; Wallace Burnet, president; Mary Clancy, president, Women's Division; Arthur Pearson, guest speaker; Edna Swihart, vice-president, Women's Division; Arthur Dallia, first vice-president; Rhoda M. Stewart, secretary, Women's Division; Harry Wise, treasurer; Carl O. Tremba, national director.

The regular January meeting of the Women's Division of the Purchasing Agents Association of Chicago, designated as "Bosses' Night", was held a week later than usual in order to permit the attendance of the officers of the Men's Division. Over fifty per cent of the members attending brought a company executive to the meeting.

Arthur G. Pearson, Director of Purchases for the American Meat Institute of Chicago, was the principal speaker, on the subject "Why A Purchasing Agent Works". Mr. Pearson enumerated and discussed what he termed the seven motivating "drives".

Wallace Burnet, president of the Men's (Please turn to page 262)

# Only GOUILD Has IT!

A modern research
laboratory with
pilot manufacturing plant
where advance-design batteries
are constantly created—
and proved before production.

Gould uses the merallowers to photographic magnifications of the structure of carlend connectors, parts and gold frames.

The Metalloscope, a combination high-powered microscope and camera, is helping Gould scientists find the answers to age-old lead casting problems.

With it, the complex crystalline structure of lead castings has become an open book. As a result, information rapidly becoming available points the way to even stronger, electrically more efficient grid frames, posts, straps and connectors. For better batteries always, choose GOULD—FOR FIFTY YEARS. THE CHOICE OF ENGINEERS.



The Gould "Thirty"—America's

# GOULD

STORAGE BATTERY
CORPORATION

Including the Storage Battery Division of Philo Corporation

Always Use Gould Automobile and Truck Batteries

# Aljian Speaks At Hawaii Assn. Meeting



George W. Aljian, Director of Purchasing and Packaging for California and Hawaiian Sugar Refining Company (second from right) and H. T. Woodward, Chief Engineer, get the traditional greeting on their arrival in Honolulu. J. V. Kiehlbauch, (left) president of the Purchasing Agents Association, of Hawaii and K. Y. Quon, (right) public relations chairman, welcome the visitors.

George W. Aljian, Director of Purchasing and Packaging for the California & Hawaiian Sugar Refining Co., Crockett, Calif., was the guest speaker at a meeting of the Purchasing Agents Association of Hawaii held on January 27.

Mr. Aljian, who is chairman of the educational committee of the National Association of Purchasing Agents, said that to attain the recognition the purchasing profession deserves in Hawaii, the association members must consider education as a continuing process. He stated that the national educational committee is prepared to assist the Hawaii chapter in starting a study program on the principles and procedures of purchasing as well as on visual aid education.

"A purchasing agent, to play an important part in management must have vision, imagination and a capacity for leadership," he told the group.

"Few are born with these qualifications and must attain them by practical experience and continuing studies, plus the ability to use the knowledge gained in this manner", he added.

"There must be an endless and relentless search for value on the part of the purchasing agent", Mr. Aljian continued, "and it is his responsibility to procure merchandise and service at the right price, at the right place and at the right time."

Herbert F. Cullen, purchasing agent for the Honolulu Rapid Transit Co., is educational committee chairman.

# ARMCO LEGAL COUNSEL GUEST AT DAYTON ASSN. MEETING

E. A. Correa, legal counsel for Armco Steel Corporation, Middletown, O., was the principal speaker at the January dinner meeting of the Purchasing Agents Association of Dayton.

Mr. Correa reviewed the Supreme Court's recent decisions in the cement and steel cases on basing point pricing. He emphasized the legal aspects of these decisions and pointed out some possible effects of changing from basing point prices to f.o.b. mill prices as they may influence other commodities.

President Ed Sander presented as his guests during the meeting three men from the Cincinnati Association: Joe Mullen, president; Bob Nieman, editor of "Cincinnati Purchasor"; and Al Bader of the publication committee.

The association's annual Ladies' Party and dinner dance was held on January 29 at the Miami Valley Golf Club.

# NEW ORLEANS ASSOCIATION EDUCATIONAL MEETING

The Purchasing Agents Association of New Orleans held an Educational Meeting on Thursday, January 27, in the New Orleans Public Service Conference Room. Guest speaker was Heinz Luedicke, assistant to the publisher of the "New York Journal of Commerce". Mr. Luedicke spoke on "Commodity and Economic Trends."

Jennings Randolph, president of Capital Airlines, Inc., and former representative from West Virginia, was the principal speaker at the January 10 meeting of the association. Mr. Randolph warned the gathering that democracy in the United States may be lost by default if citizens continue to disregard the responsibility of using the ballot.

(Please turn to page 262)

# "EXPLORATIONS FOR PETROLEUM" PITTSBURGH MEETING TOPIC

A closed meeting of the Purchasing Agents Association of Pittsburgh was held at the Hotel William Penn on January 18. Guest speaker was Ralph W. Wyckoff of Gulf Research and Development Corporation who spoke on "Geophysical Explorations for Petroleum". He told in laymen's language of where oil is, how much there is, and how it is found, Mr. Wyckoff's appearance at the meeting was arranged through the efforts of member Dick Averell.

## QUALITY CONTROL TALK AT ROCHESTER MEETING

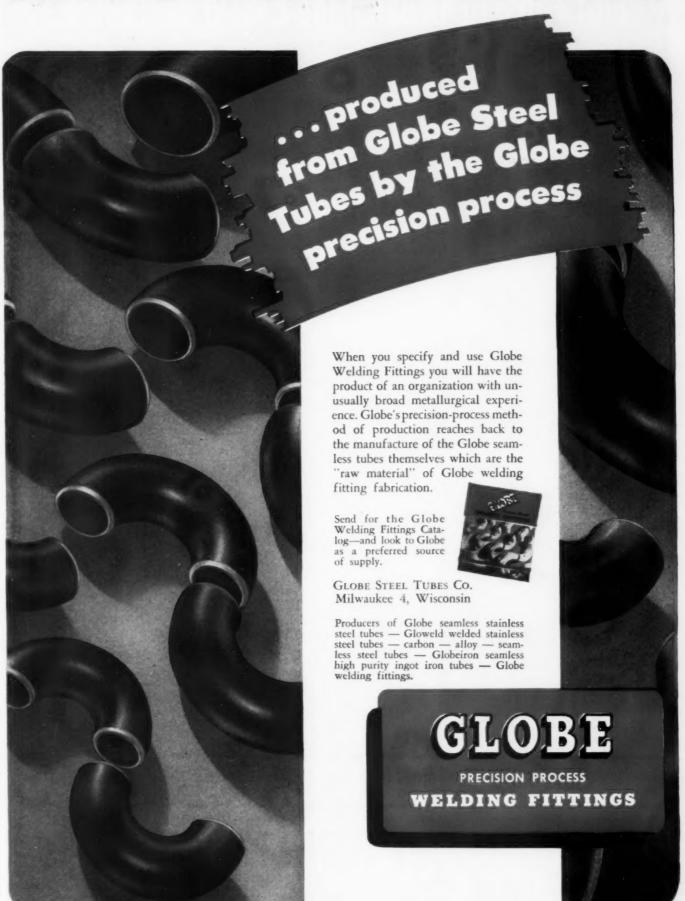
The regular meeting of the Purchasing Agents Association of Rochester was held at the Rochester Club on January 26. Guest speaker was Charles Hudson of the Norton Company, who discussed "Factors Controlling Quality in the Manufacture of Abrasive Products". Among the guests at the meeting were members of the Rochester Association of Industrial Buyers and the Society for Quality Control.

# St. Louis Assn. Holds Executive Night



George A. Renard, executive secretary-treasurer of N.A.P.A. is shown above addressing the annual Executive Night meeting of the Purchasing Agents Association of St. Louis, held on January 11. At his left are A. W. Soell, president, and Preston M. Green, secretary, of the association.

# CLOBE WELDING FITTINGS







# Bauer & Black Duct Tapes Are Still Airtight, Flexible, Unweakened, After Heptane Flame Test!

This dramatic test is typical of many which every Bauer & Black product must pass to prove dependability far in excess of normal job requirements.

Wherever flexible connections are required in heating or air-conditioning work, Bauer & Black Duct Connector Tapes 281 and 263 combine ideally to provide the neatest, fastest method ever developed. The time saved is money saved.

Backing for both tapes is enduring, heat-resistant, super-strong Fiberglas.\* No. 281 is coated both sides, No. 263 is coated one side with thermosetting adhesive that grips tighter under heat . . . actually improves with age. Get this versatile combination for your next job . . . in handy rolls from your local jobber. Or write Bauer & Black, Dept. 9-3.

\*Reg. U.S. Pat. Off. (by Owens-Corning Fiberglas Corp.)

A product of

Division of The Kendall Company • 2500 S. Dearborn St. • Chicago 16

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

260

Want Additional Product Information? See Page 19.

PURCHASING

# SUCCESSFUL GIFT PACKAGE

- IN CORRUGATED

At the H & D Package Laboratory, leather and wood and linen patterns are often simulated in corrugated board. Distributors of specialty items, are capitalizing on H & D ingenuity and craftsmanship to sell merchandise. Relatively inexpensive, distinctive in appearance, rugged in construction, these H & D corrugated boxes are a complement to the highest quality products.

# FLUORESCENT LIGHTS

Shipped Safely in CORRUGATED BOXES

A complicated problem of packaging fluorescent fixtures—odd-shaped, bulky, fragile—has been solved with an H & D engineered box which has reduced the entire packing operation to a mere 70 seconds! An ingenious arrangement of six interior pieces of corrugated board provides more than ample protection. The packed product can be stacked and loaded and shipped as safely as any other type of merchandise—thanks to H & D package engineering.



PRODUCT QUALITY is reflected by



# FAMILY NAME FEATURED in "Look-Alike" Packages

Quick, easy identification and selection are important where the same product is made in several sizes and several models. Automotive parts, for example, win greater dealer acceptance when the packaging plan includes simplicity, legibility and convenience. The H & D boxes shown here effectively display the manufacturer's name, conserve shelf space, give necessary product information, simplify inventory-taking, require no repack-

ing, provide ample product protection.

HED BOXES

FOR MORE INFORMATION WRITE

HINDE & DAUGH
Authority on Packaging

Executive Offices: 4903 Decarur St., Sandusky, Ohio

FACTORIES IN

Baltimore 13, Md. • Buffole 6, N. Y. • Chatham, Caterle Chicago 32, Illinois • Cleveland V, Ohio. • Detroit 27, Mich. • Gloucester, N. J. • Robaken, N. J. • Kensas City 19, Kansas • Lenair, N. C. • Mentreal, Quebec Richmond 12, Vo. • St. Loyis 15, Mo. • Sandyalty, Ohio Taronto Outprie

ds

NG



Yes, all B-Right-On Socket Screws are of one quality . . . the highest. Heads are concentric with the threads, which are a uniform No. 3 fit. The sockets are of uniformly correct size assuring a perfect fit with the wrench. Faces are flat and uniform, points are smooth and perfectly formed.

The high, never-varying quality of B-Right-On Socket Screw products is one reason why these "uniquality" screws are preferred by many original equipment manufacturers and other users for fast, dependable fasteners.

Brighton Screw & Mfg. Co. 1845 Reading Rd. Cincinnati 2, Ohio



BRIGHTON Screw & Mfg. Co. (Continued from page 256)

Division, Harry Wise, treasurer, and Walter Auburn, editor of the "Chicago Purchasor", all spoke briefly.

Miss Mary Clancy, president of the Women's Division, announced that Grace Bell of Standard Varnish Works and Florence Hayes of Chicago Tool and Engineering Company would be co-chairmen for the women's activities at the N.A.P.A. convention in June.

# FLORIDA ASSOCIATION LED FIGHT FOR CENTRALIZED PURCHASING FOR STATE

Announcement by Governor Fuller Warren of Florida that central purchasing will be applied to all agencies directly under his control has climaxed a long campaign waged by the Purchasing Agents Association of Florida for the installation of centralized purchasing in the state.

An efficient system of purchasing for the state was incorporated into the list of objectives set up when the Florida association was organized in 1944, with E. P. Danese as first president. The association pressed the fight for the reform, with the result that the state legislature formed a committee to conduct a study of the situation. Gross inefficiency was disclosed, which formed the basis for stronger demands in the 1945 and 1947 sessions of the legislature for more efficient procurement methods. Governor Warren used centralized purchasing as

part of his platform during his successful campaign.

The new system does not apply to those state branches which operate independently of the governor's office, as any change in their set-up would require legislative action. This is expected to follow, however, when the legislature meets in April.

Dan D'Alemberte, 1948 president of the Purchasing Agents Association of Florida, has been chosen by the governor to be the first State Purchasing Agent. He was formerly a buyer for the Board of State Institutions.

# + + + HOUSTON MEETING

A regular meeting of the Purchasing Agents Association of Houston was held on January 11. Feature of the meeting was the showing of the color sound film "Air Power is Peace Power", released by Eastern Air Lines.

# TOLEDO ASSOCIATION HOLDS LADIES' NIGHT

The annual Ladies' Night meeting of the Purchasing Agents Association of Toledo was held in the ballroom of the Commodore Perry Hotel on Thursday, February 17.

Speaker of the evening was Frederic Snyder, well-known "roving reporter" and publicist who spoke on present day problems.

(Please turn to page 264)



# Announcing the NEW

PIPE WRENCH

# fully engineered

- \* Modern functional design—only four parts
  —provides ideal lightness, strength and
  safety.
- \* Exceeds Federal specifications: Type II Heavy Duty—GGG-W-651a.
- \* Light in the hand—streamlined for weightsaving—palm-fitting handle.
- ★ Tough on the job—Roxco metal handle for maximum strength.
- ★ Positive grip with quick release—simplified cushion action.
- ★ Drop forged alloy steel replaceable insert jaws—teeth hardened by localized induction heat process.

# fully guaranteed

against defects of material and workmanship

ROXCO

Look for this name and Trimont Mfg. Co. on each wrench — your assurance of better, longer service.

Here's the up-to-the-minute modern, fully engineered Heavy Duty Pipe Wrench that buyers and users have looked for. It's the new ROXCO—the advanced wrench design perfected and manufactured by the long experienced makers of TRIMO Tools. It is the ultimate result of new patterns and

dies, new metallurgical formula — every part newly designed with modern engineering and crafting care to simplify and save weight while actually adding strength. We say — and you'll prove to your satisfaction — that the new ROXCO is a great addition to the famous Trimont line.

Write for catalog.

# TRIMONT MANUFACTURING CO.

Division of Aetna Industrial Corp.

55½ Amory Street, Roxbury, Boston 19, Mass.

## Trimont Time Tested Tools

Pipe Wrenches • Chain Wrenches • Monkey Wrenches • Stillson Type Wrenches • Spud General Utility Wrenches • Saunders,

Barnes and Other Type Pipe Cutters • Pipe Vises • Saw Vises • Kit and Portable Vises



Your guarantee of satisfaction with Western brass products is compounded of our many years of experience plus our complete and modern production facilities.

# WESTERN BRASS MILLS

Division of OLIN INDUSTRIES, INC. Executive Offices, East Alton, Illinois Mills . . . East Alton, III. . . . New Haven, Conn. MILL PRODUCTS . FABRICATED PARTS





## M.P.A.C. CELEBRATES 12TH ANNIVERSARY

The Metropolitan Purchasers' Assistants Club celebrated its twelfth anniversary at a regular meeting held on Tuesday, February 8 at the Midston House, New York City.

Guest speaker for the evening was George E. Henry, Associate Editor of Purchasing, whose subject was "Evolution In Purchasing". Tracing the development of modern industrial purchasing and some of the obstacles in its path, Mr. Henry, using specific examples, asked the members to think over the

following points:

"1. Outspoken members of the national association are not holding their punches in their efforts to bring the national body up to par. 2. One of the biggest handicaps facing the purchasing man today is that plant managers and other responsible heads are not familiar with and do not know the possibilities inherent in modern scientific purchasing. 3. One leading purchasing agent feels that his brother purchasing agents are content to take life comparatively easy. He feels they do not comprehend that the savings made possible by scientific purchasing. material control, and the other things a good purchasing agent should have a part in, will go a long way in offsetting the ever climbing break-even point that has industry guessing today. 4. This last point should be made clear to boards of directors, presidents and other company officers, and to the thousands of stockholders of commerce and industry, so that they may know the importance of sound, scientific purchasing."

#### N.W. PENNA. GROUP HEARS ENGINEERING DIRECTOR

The regular meeting of the Purchasing Agents Association of Northwestern Pennsylvania was held at the Carver House, Warren, Pa., on Thursday, February 10.

Guest speaker for the meeting was Fred Plummer, Director of Engineering. Hammond Iron Works. Mr. Plummer. who is Vice President, District No. 4. American Welding Society, spoke on modern trends in the storage and conservation of petroleum products, and on recent developments in welding.

A commodity discussion on steel was led by H. W. Ledebur.

## 1 1 1 ONE P. A. TO ANOTHER NEW ENGLAND MEETING

George A. Renard, executive-secretarytreasurer of the N. A. P. A., was the principal speaker at the February 14 dinner meeting of the New England Purchasing Agents Association, under the usual caption "From One P. A. to Another." At the afternoon conference preceding the dinner meeting, James E. McDonald, District Manager of Passenger and Cargo Sales for American Airlines, spoke on the subject "Air Freight."

(Please turn to page 268)

AN "EYE-OPENER" IN

# nterchangeabilit OF PARTS

THE EASY, trouble-free interchangeability of M-40 parts makes instrument men sit up and take notice. For this is an ace in the hole to them in case of emergency. It means the end of timewasting, costly delays in fitting and adjusting replacements of parts accidentally damaged.

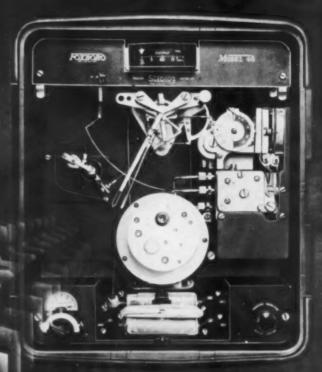
This interchangeability of parts is no happenstance. Every part was designed to eliminate variations that might necessitate critical field adjustments...and vital parts were built to machine tool precision. In the eyes of expert instrument men, interchangeability is another important advantage that makes M-40 the outstanding modern controller.



"THE FINEST MODERN CONTROLLER"



The Model 40 Pneumatic Controller is available for temperature, pressure, flow, liquid level, humidity, density, etc., in a full range of control actions and combinations. Write for Bulletin 381. The Foxboro Company, 262 Neponset Avenue, Foxboro, Mass., U. S. A.



# Identical Performers

construction makes
duplication of parts easy

All main and sub-assemblies of the Model 40 Controller may be interchanged freely without impairing the accuracy and stability of the instrument. If, for example, the control relay should ever need replacing, another may be easily substituted with positive assurance that it will restore the original performance characteristics.

A closer examination of the control relay shows that its design and construction are so basic, so free from complicated parts and critical adjustments, that there are no manufacturing problems in turning out duplicate performers. It also shows that proper alignment of control relay with other parts is automatically assured.

This advanced engineering, typical of M-40 design and construction, is another important reason why M-40 is the finest modern controller.

FOXBORO
REG U.S. PAT. OFF.

11-40

"THE FINEST MODERN CONTROLLER"



WITH A "NATIONAL" REPUTATION

Solder users the country over long have looked to National Lead for solder of the proper form and formula to meet their metal-joining needs.

The reason is simple: National Lead solder works in a way that shows (a) extreme care in the selection of basic metals for the alloy; (b) metal-mixing know-how resulting from generations of experience; (c) precise mechanical control in the formation of the solder, whether bar, ingot, slab, wire, ribbon or segment.

You can depend upon National Lead solder to conform to specifications because it is produced under rigid spectrographic laboratory control. It melts at the proper temperature, flows smoothly and uniformly, maintains its pre-determined plastic range, and freezes to form a tight, strong joint.

Whatever may be your solder need, National Lead has the metal resources and the mental resource-fulness to meet it. *Solder* that fact to your mind so that you'll look to the leader in lead and lead alloys when next you're in the solder market.

**FLUXES** — Under the trade name "NALCO" we make and market a complete line of fluxes to meet every soldering need. A folder describing each of the 22 "Nalco" fluxes is available.

# ATIONAL LEAD COMPANY

111 Broadway, New York 6, N.Y.



Offices and Plants in Principal Cities Pacific Coast: Morris P. Kirk & Son, Inc., Los Angeles Canada: The Canada Metal Company, Ltd. Toronto Whether you run a huge plant, or a small job shop...

# don't pay taxes

\*NEEDLESS HANDLING, in any part of your plant operation, puts a heavy tax on profits. Loading or unloading, movement of workin-process, filling mixed-package orders, or stacking for storage, may be costing you from two to twenty times more than is necessary!

# Kapislan

will cut operating costs, quickly pay for itself, and keep on making profits for you . . . indefinitely



Often the cost of Rapistan Material Flow equipment can be written off in a matter of weeks. Rapistan is the most flexible line of package-type conveyors in the country. You can get a simple, short length portable conveyor for truck loading, a between-floors power-belt, or a combination of multi-directional gravity and power flow. Rapistan equipment is easy to install, can be delivered promptly. With it you get all the benefits of leadership in experience and quality.

tree help! To help you visualize how you can profit by Rapistan Material Flow, write on your business letterhead for a copy of "Rapistan Material Flow at Work." No obligation.

See how plant carloading was cut from 90 to 8 man hours...how storage confusion was eliminated and loading time reduced 66%...how a processor saved \$200 a week . . . how 2 men do the work of 10 with less fatigue ... and how Rapistan can work for you. Just write to-

THE RAPIDS-STANDARD COMPANY, INC.

13 Rapistan Building, Grand Rapids 2, Mich.

Representatives in All Principal Cities





#### WISCONSIN NIGP CHAPTER HOLDS QUARTERLY MEETING

The fifth quarterly meeting of the Wisconsin Chapter, National Institute of Governmental Purchasing, was held at Watertown, Wis., on January 21. Principal speakers on the meeting program were George W. Jansky, President of the Jansky Printing Company and L. M. Bickett, rubber manufacturer, both of Watertown.

Mr. Jansky outlined several methods of cost saving on orders for printing, including the selection of standard paper sizes, multiple printing of forms, use of duplicate electrotypes, and avoiding special rulings for accounting forms. He recommended that buyers consult with the printer before setting up their specifications on a job to avoid unnecessary costs.



Maurice S. Park, Dane County P.A., president of the Wisconsin NIGP Chapter

Mr. Bickett displayed a set of samples, showing crude rubber and other ingredients used in the manufacture of mechanical rubber products, and various stages of processing up to the finished seat cushions and other products that the purchasing agent buys.

General discussion covered the testing of light bulbs, policies of depreciation of equipment, and the operation of multigraph and mimeograph departments for producing interdepartmental forms.

The next meeting will be held at Racine, on April 15.

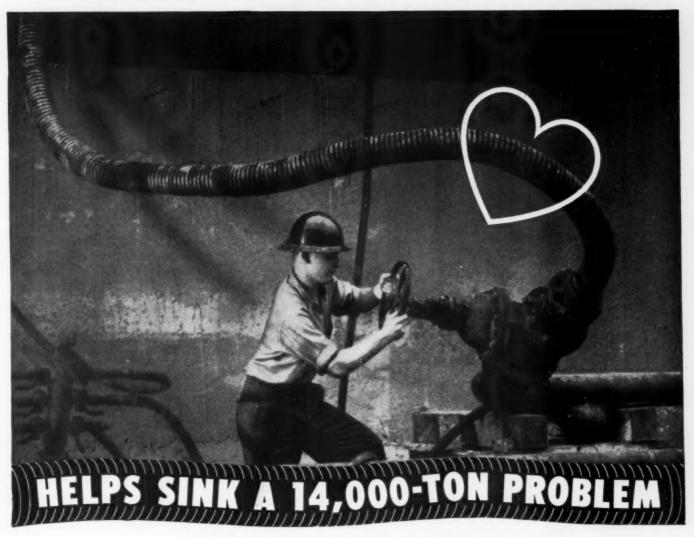
#### "IMPRESSIONS OF BRITAIN" RHODE ISLAND ASSN. TOPIC

A regular meeting of the Rhode Island Purchasing Agents Association was held at the Narragansett Hotel, Providence, on Monday January 24. Principal speaker was The Reverend Paul Van K. Thomson, Rector of Saint Stephen's Church, Providence.

Father Thomson spoke on "Impressions of Great Britain Today", based on his recent trip to that country, during which he talked with responsible people in all fields of activity, including business and

The commodity forum was under the direction of Howard Smart. The panel of experts was as follows: Ralph Berry, oil; Harold Gamble, steel; John Mc-Kenna, lumber; Frank Page, coal; Dan Townsend, chemicals.

(Please turn to page 270)



# Penflex flexible metal hose provides efficient, timesaving service as jet feeder lines on tunnel project

Sinking a 14,000-ton caisson 70 ft. into a sand island is a tough nut to crack. One of the problems confronting engineers was the need for flexible jet feeder lines, to transmit water at high pressure up over the top and down to the jets at the bottom of the caisson.

These jets force away sand on which the caisson rests, allowing it to settle gradually as the top sections are built up. This constant changing of the top level made flexiblity a "must" for jet feeder lines—but with Penflex "Flexineering" on the job, the problem vanished.

Penflex engineers recommended the installation of

4" interlocked flexible metal hose, thus eliminating the need for connecting and disconnecting rigid pipes, saving time and labor. Penflex hose is plenty flexible . . . resists high pressure . . . assures tight, free-flowing service.

When flexible tubing problems bog down efficiency and production in your plant . . . when you need flexible, leak-proof transmission of liquids, air, gas, or light solids, consult Penflex for "Flexineering" service (the science of engineering each type of flexible tubing to the problem). And for a complete line of flexible metal hose, tubing, and couplings from 1/6" I. D. to 30" for all purposes, write today to . . .

# PENNSYLVANIA FLEXIBLE METALLIC TUBING COMPANY

7218 Powers Lane

Philadelphia 42, Pa.

BRANCH SALES OFFICES - BOSTON . NEW YORK . CLEVELAND . CHICAGO . HOUSTON . LOS ANGELES

enflex... HEART OF INDUSTRY'S LIFE LINES



DESIGNED with full cylindrical body sections, a construction formerly found only in high pressure steel valves, Fig. 2228, 200 Lb. S.P. Bronze Union Bonnet Gate Valves are proof against distortion due to internal pressure strains. Initial proportions and seat tightness are maintained in

service for a longer period than that provided by conventional bronze gate valves.

In the tradition of LUNKENHEIMER leadership these valves are also equipped with the exclusive Alloy Stems which eliminate stem thread failure due to wear; and, in addition, nickel alloy double wedge discs. Thus triply protected against failure, Fig. 2228 and companion valves give lowcost, trouble-free service.

FIG. 2228 SCREW ENDS FIG. 2229 FLANGE ENDS

Double disc, rising stem

# YOUR LUNKENHEIMER DISTRIBUTOR

will gladly show you how this valve's extra strength means extra service, extra value too! Ask for Circular 534 or write direct.

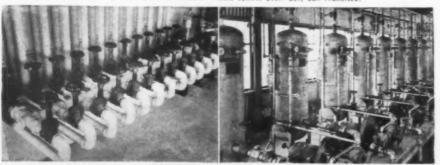
ESTABLISHED 1862 THE LUNKENHEIMER CO.

CINCINNATI 14, OHIO. U.S.A.

BOSTON 10 PHILADELPHIA 34

EXPORT DEPT. 318:322 HUDSON ST., NEW YORK 13, N. Y.

Views in modern plant of W. P. Fuller & Co., pioneer western paint mfrs., San Francisco, Cal. Mech. contr.: Scott Co., San Francisc



## RAILROAD MAN SPEAKER AT CENTRAL ONTARIO MEETING

A regular meeting of the Purchasing Agents Association of Central Ontario was held at the Iroquois Hotel, Galt, Ontario, on Tuesday, January 25. Guest speaker was Silas S. Salter, Ca-

nadian representative for the Pennsylvania Railroad. A film, "Clear Track Ahead" was shown in conjunction with his talk.

# MATERIAL HANDLING FILM SEEN BY FT. WORTH ASSN.

A dinner meeting of the Purchasing Agents Association of Fort Worth was held at the Worth Hotel on Tuesday. January 18. A sound film entitled "Mod-ern Methods of Material Handling" was shown by L. H. Meyers of the Thomas A. Edison, Inc., storage battery division.

## TRADE COMMISSIONER SPEAKS TO BRITISH COLUMBIA ASSN.

British and Canadian trade relations was the subject of a talk by P. L. Young, United Kingdom Trade Commissioner, before the Purchasing Agents Association of British Columbia, at their regular monthly meeting on January 11. Mr. Young outlined British trade policies and the reasons for Britain's trading with both eastern and western European nations. He explained that this was at the request of E.R.P. and the United Nations.

One minute's silence was observed in memory of the late Reg Baker.

C. S. Foreman, Hayes-Lawrence Companies, was appointed secretary to replace A. J. Shaw, resigned.

Alex Dunbar, recently promoted to the position of sales manager, Vancouver Supply Company, turned over the chair to G. L. Haszard, B. C. Electric Company, who thanked him on behalf of the members for the grand job he had done in his short but active term of office. An engraved panel was presented to him in appreciation.

The monthly meeting on January 25 of the Educational Committee featured a talk by L. J. Groom, credit manager, Imperial Oil Company Ltd. Mr. Groom's subject was "Purchasing in Relation to Credit"

A plant visit to the new Kelly Douglas building drew a large number of members on January 26.

The Vancouver Island Branch of the association held its first meeting for 1949 at the Union Club, Victoria, on January 5. Two films, "By Jupiter" and "Operation Overflow" were presented by Jack Woodley, B. C. Electric Company Ltd. New members of the group are Sid Elkington, Kyuquot Trollers' operative Association; Vern Porter, B. A. Paint Co. Ltd.; and Rusty Sampson. City of Victoria. Gerry Sharpe, City of Victoria, chairman of the membership committee, reported very satisfactoy progress in the building of membership in the newly formed organization.

(Please turn to page 272)

Fre-assembly

REDUCES
PRODUCTION
COSTS



SEND FOR THIS FREE SAMPLE KIT!

Test SEMS by SHAKEPROOF on your own assembly ... check the many advantages that this modern fastener unit provides





Here's what SEMS-by-SHAKEPROOF will do for you: eliminate separate lock washer handling completely... prevent lost lock washers or shortages that cause costly delays... assure tight, vibration protected fastenings. You get maximum vibration protection because each lock washer is automatically positioned for greater locking power, pulled closer under the screw head for maximum locking tooth engagement.

And, for even greater economies through pre-assembly, Shakeproof engineers have developed hundreds of special SEMS-by-SHAKEPROOF combinations for specific applications. The typical example shown at left replaces three separate pieces . . . a screw, a lock washer and a spanner washer . . . and provides a better, more economical fastening! Send for your free SEMS-by-SHAKEPROOF sample kit today! See how these modern, pre-assembled fastener units will reduce your production costs!

SHAKEPROOF inc., Division of Illinois Tool Works, 2501 North Keeler Avenue, Chicago 39, Illinois. In Canada: Canada Illinois Tools, Ltd., Toronto, Ontario.

SEMS -by-Shakeproof



# More than 25 years of experience in meeting America's shipping problems!

The 3 best-situated General Box plants cooperated in rushing the production and delivery of this order. Another example of how General Box Company combines its broad and flexible facilities to meet the emergency requirements of its customers.

Whether you need 1,000 or 100,000 containers, you can be sure of quick, efficient service. You can also be sure of a lightweight, compact, extra-strong container that is designed to meet your specific needs.

General BOX COMPANY

\*\*\*\*\*

shipping containers

GENERAL OFFICES: 48 West Illinois Street, Chicago 10.
DISTRICT OFFICES AND PLANTS: Breeklyn, Cincinnati,
Detroit, East St. Louis, Kansas City, Louisville, Milwaukee,
New Orleans, Sheboygan, Winchendon, Natchex.

Continental Box Company, Inc.: Houston, Dallas.

Ourtwo Designing and Testing Laboratories are available for the improved packing of your products. They are equipped with the most modern testing apparatus and staffed by experts with many years of experience in designing more efficient shipping containers.



Send for your free copy of "THE GENERAL BOX"

General General General Cleated Corrugated Corrugated Corrugated Corrugated Corrugated Container General Fallet

# CONDITIONS IN ENGLAND CANTON MEETING

John B. Baker, chief production engineer of the Timken Roller Bearing Co., gave a talk on conditions in England as he observed them on a recent business visit, at the January meeting of the Purchasing Agents Association of Canton, Ohio. He told about the war damage and the efforts being made by Britain to regain a portion of its lost commerce, and the scarcity of luxuries and many of the necessities of life.

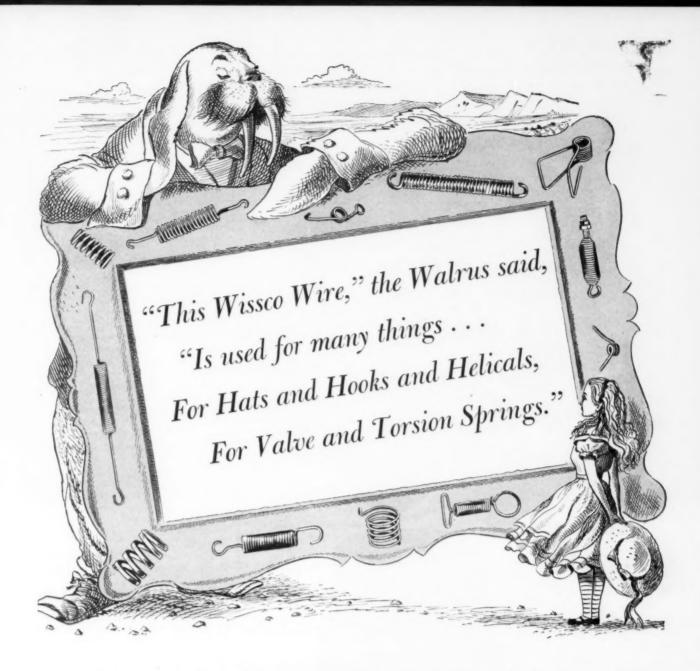
In the course of his talk Mr. Baker said that many of the "new deal" philosophies had been tried first in England under different names some ten to 20 years ago, and not with happy results. 'We are still following the same kind of experimentation", he continued. "The recent "fair deal" ideas are more of the same. Government has left its original role and has crept insidiously into our business life. First we had the elimination of competition attempt, the subsidies, the dole, the payment for not doing work, creation of artificial price level pegging, the entrance into business as an active competitor with taxpavers, whereby we are being taxed to pay for the financing and the losses of our government-business competition, which is wasteful of manpower and money, sometimes corrupt and always emeshed in red

tape.
"Through individual enterprise our country built up great wealth and a unique position among the nations of the world. Now we are experiencing a social revolution and the power of our government is being used to redistribute that wealth. The temptation of the easy handout is too strong for most people to resist. Those who sound warnings and talk conservatism are unpopular and repudiated. If you are in favor of socialism and eventual communism and dictatorship just sit tight and do nothing and wait. If you are not in favor of it, you had better get busy and sell to as many people as you can reach the idea that our socialistic welfare state has got to stop. We can never undo the harm which has been done, but we can stop doing further damage to ourselves. Let us hope that we come to our senses before we have gone too far."

## YOUNGSTOWN DISTRICT PURCHASING AGENTS ASSOCIATION

Youngstown District Purchasing Agents Association is the new name of the Valley Purchasing Agents Association, the change having been made as of January 25th. The change was made because the membership is made up of individuals representing companies in Youngstown, Ohio and adjacent cities and towns. B. D. Henderson, Westinghouse Electric Corp., Sharon, Pa., is president of the Youngstown District association, and L. H. Ransom, Trucson Steel Co., Youngstown, Ohio, is secretary.

(Please turn to page 274)



BECAUSE of its fine quality, Wissco Oil Tempered Wire is becoming the first choice of more and more manufacturers whose products require this type of wire.

Wissco Oil Tempered Wire is characterized by its uniformly high tensile strength, torsional value and fatigue life. It is supplied in a size range of from .010 to 9/16" in coils, diameters ranging from 8" to 6' and in cut lengths.

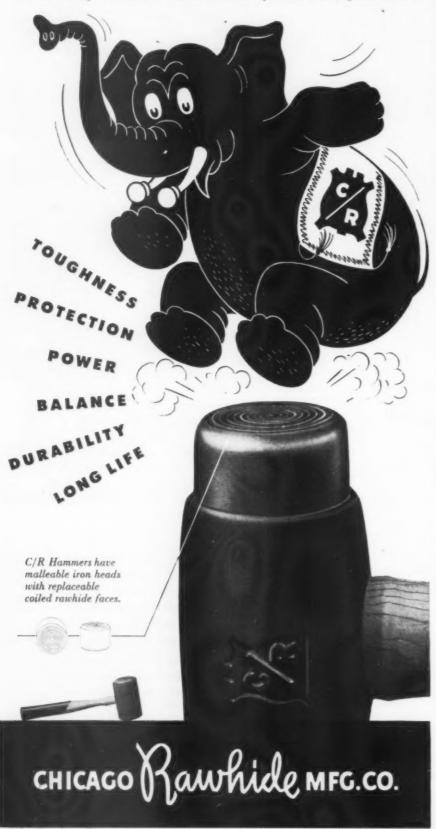
For this and scores of other steel specialty wires, call Wickwire Spencer. We can meet your needs for high or low carbon steel wire; round or shaped; in a wide variety of sizes, tempers, grades and finishes. And, if you have a wire problem, our metallurgists will be happy to help develop the type of wire that best meets your requirements. Send your wire questions to Wickwire Spencer.

EXECUTIVE OFFICE—SOOFIFTH AVE., NEW YORK 18, N.Y. - SALES OFFICES—BOSTON-CHICAGO-DENVER-NEW YORK

PACIFIC COAST SUBSIDIARY - THE CALIFORNIA WIRE CLOTH CORP., OAKLAND &, CAI



RAWHIDE gives you more in soft hammers and mallets. And Chicago Rawhide gives you exceptional power and maximum protection. C/R hammers and mallets absorb shock, deliver powerful blows, protect finished surfaces and stand up under tough use. For hammers and mallets that never split, crumble or mushroom, always ask for Chicago Rawhide.



1203 ELSTON AVENUE

CHICAGO 22, ILLINOIS

Other C/R maintenance products are: round, flat, twist belting; belt pins and lacings; gears, pinions, gear blanks; aprons, hand leathers; hydraulic packings.

#### EDUCATIONAL COURSE ON TECHNICAL PROBLEMS IN PURCHASING

"Technical Problems in Purchasing" is the title of an educational course for men in purchasing, scheduled to commence April 25th for the week April 25th to 30th, incl, at the Rochester Institute of Technology, Rochester, New York. Inaugurated in 1948 as a course in "Commercial Engineering for Purchasing Personnel" it covers instruction on tools and production techniques, shop practices and laboratory work, and plant visitations. The course proved quite popular. Detailed information in regard to it may be obtained from A. L. Davis of the Rochester Institute of Technology, Rochester 8, N. Y.

The course outline, commencing with registration at 8:30 A.M. mornings, includes the following matter::

Monday:: The Purchasing Function in Profile; Architectural Blueprint Reading; Mechanical Blueprint Reading; Laboratory and Discussion—preparation of drawings, tracings, reproductions, operations of reproduction equipment; Plant visitation.

Tuesday: Capital Equipment; panel discussion on Machine Tools;; Laboratory and Demonstrations (machine shop) screw machine laboratory; Industrial Lubricants

Wednesday: Die Casting, Materials and Methods; Sand, Plaster and Lost Wax Molding of Metals; Plastics; Problems in Casting and Molding of Metals and Plastics—panel discussion; Dinner, monthly meeting of Purchasing Agents Assn. of Rochester.

Thursday: Materials Handling and Stores Methods; Distribution Problems; Price Structure.

Friday: Verification of Quality; Scientific Sampling; Quality Control Laboratory; Containers; Textiles and Fibres.

Saturday: Raw Commodity Economics. General Summation and Closing.

# TULSA ASSOCIATION

Installation of new officers for the coming year featured the regular dinner meeting of the Purchasing Agents Association of Tulsa, held on January 11 in the Chamber of Commerce dining room.

F. P. Nopper, Gulf Oil Corp., retiring president, turned the gavel over to C. W. Wallace, Mid-Continent Petroleum Corp., the new president. He in turn introduced the following new officers; J. C. Nicholson, The Tretolite Co., first vice-president; V. M. Lewis, Dowell, Inc., second vice-president, and H. M. Logan, Rockwell Manufacturing Co., secretary-treasurer.

C. G. McLaren, Vice President for District 2, N.A.P.A., made his official visit to the Tulsa association at the meeting. and delivered a short talk on district and national affairs.

A sound film entitled "Nerves of the Nation" was shown through the courtesy of the Anaconda Copper Co.

(Please turn to page 278)



# "Tubing?...Yes, I know where we can get it

"In our business we can't afford to get caught short. Constant market changes, unstable conditions, and our large volume requirements compel us to keep tab on a lot of suppliers—both actual and potential.

"So when the Chief asked about tubing, I was able to pop right back, 'Sure, I know where we can get it.' I knew that we could send steel to Nikoh and get quick service on the big quantities of tubing we need."



for welded steel tubing, pipe, conduit



Nikoh has plant capacity available for fabricating welded steel tubing (½" to 4" OD), pipe (¾" to 6" ID), and conduit ( $\frac{1}{2}$ " to 2"). Formed and welded with efficient new equipment that assures uniform quality, accuracy to specifications, prompt shipments, and moderate price. Consult Nikoh on your problems of engineering and production.

- 4. Toys & wheel goods
- 5. Heating, ventilating, air conditioning
- 6. Machinery, metalworking
- 7. Railroad, marine
- 8. Refrigeration
- 9. Petroleum
- 10. Automotive, aviation



# NOW ... there's a big change in this picture

# And you see it in quicker P-K Self-tapping Screw deliveries

REMEMBER THIS PICTURE? We used it in an August, 1946 advertisement to illustrate the serious shortage of raw materials, a main reason why deliveries of P-K Self-tapping Screws were so slow.

Now, there's a big change. Supplies of steel wire are almost normal. Backlogs have been worked down. Stocks have been built up. As a result, on most sizes of screws, in all types, prompt deliveries are again being made.

Today, there is no longer any reason why any manufacturer need accept a substitute when he wants P-K Self-tapping Screws. Parker-Kalon Corporation, 200 Varick Street, New York 14, N. Y.

YOU'RE O.K WITH P-K ... THESE EXTRAS PAY

- ORIGINATORS OF SELF-TAPPING SCREWS
- ONLY COMPLETE LINE
- . 35 YEARS' APPLICATION EXPERIENCE
- EXPERT ASSEMBLY ENGINEERING
- . UNSURPASSED QUALITY CONTROL LABORATORY
- · LARGEST PRODUCTION FACILITIES
- TOP-RATED DISTRIBUTORS EVERYWHERE

AVAILABLE THROUGH

Par accredited distributors

PARKER-KALON SELF-TAPPING SCREWS

FOR EVERY METAL AND PLASTIC ASSEMBLY

OTHER PARKER-KALON PRODUCTS: Cold-Forged Socket Screws, Wing Nuts, Thumb Screws Hardened Screwnalis and Masomy Nails - Shur-Grip File and Solder Iron Handles Mutal Punches - Damper Regulators and Accessories



#### solutions cost less than 2 cents a gallon!

Yes, today clean-up crews everywhere are discovering the sensational time and money saving features of job-proved Elektro-Purj-It! Think of it . . . Elektro-Purj-It solutions actually cost less than 2 cents per gallon . . . loosens dirt and grease faster, easier than you ever hoped possible! Elektro-Purj-It is dustless and non-caking . . . ideal for cleaning walls, floors, woodwork, reflectors, dadoes and machinery! Investigate Elektro-Purj-It today!

THE DIVERSEY CORPORATION INDUSTRIAL MAINTENANCE DEPARTMENT, 53 WEST JACKSON BLVD., CHICAGO 4, ILLINOIS IN CANADA: THE DIVERSEY CORPORATION (CANADA) LTD., TORONTO, ONTARIO

# FREE SAMPLE See for yourself the amazing difference Elektro-Purj-It really makes! Select a tough cleaning job in your plant and compare the outstanding cleaning action of Elektro-Purj-It with any other cleaner . . . compare and you, too, will be convinced! Mail this coupon for your free sample! No



THE DIVERSEY CORPORATION Industrial Maintenance Department, 53 W. Jackson Gentlemen: Please send me at once my free sammulti-purpose cleaner!	n Blvd., Chicago 4, III. ple of Elektro-Purj-It that sensational
NAME	***************************************
TITLE	
COMPANY	
STREET	
CITY	EYAYE

# COLUMBUS ASSOCIATION HOLDS ANNUAL SPORTS FESTIVAL

The annual mid-winter sports festival of the Purchasing Agents Association of Columbus was held in the ballroom of the Southern Hotel on January 27.

Among the outstanding figures in the sports world who attended the affair and spoke briefly were: Dick Larkins, athletic director at Ohio State University; Carroll Widdoes, backfield coach for Ohio State; Orie Youngman ,secretary of the Railroad Building and Loan Assn., who was named "Bowler of the Year" in 1947; Allen Rankin, vice president of the Buckeye State Building and Loan Co., and one of the state's leading amateur golfers; Bill Smith, member of Ohio State's swimming team; and E. C. Kreiger, football referee and secretary of the National Football Rules Committee.

# MICHIGAN ASSN. SEES FILM ON STEEL TUBING

The Purchasing Agents Association of Central Michigan held their regular meeting on Tuesday evening, January 18 at the Women's Clubhouse, Lansing, Mich. One of the features of the meeting was the showing of a motion picture on the manufacture of steel tubing. The film covered the process from the mining of the ore to the finished product, and was presented by Ray A. Nobel of the National Tube Company, subsidiary of the United States Corporation.

Wayne Fuller, director of research for the Grand Rapids Varnish Association spoke to the group on "Paint Products

and Research'

#### HEINRITZ SPEAKER AT WESTERN MASS, MEETING

A regular dinner meeting of the Purchasing Agents Association of Western Massachusetts was held on January 20 in the Sheraton Hotel, Springfield. Principal speaker at the meeting was Stuart F. Heinritz, editor of Purchasing.

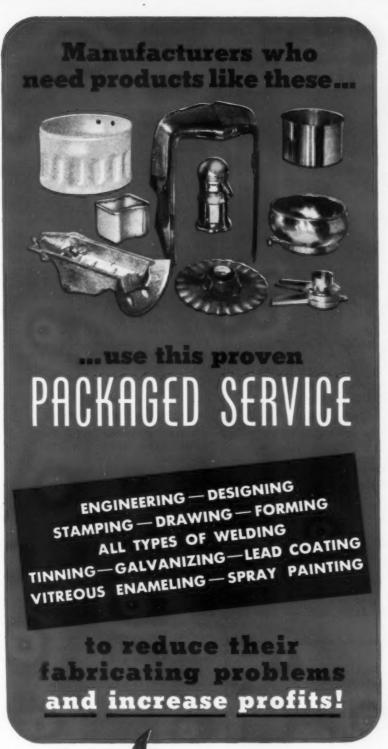
Mr. Heinritz pointed out that the largest single expense which most companies have is the purchasing of supplies and equipment, presenting purchasing agents with the duty to select the right markets and to analyze requirements carefully. He said "the use of wisdom in purchasing is one sure way to cut operational costs and keep them at a minimum."

The meeting opened with a discussion led by George Gilpatrick on "The Outlook for 1949".

## HOSPITAL BUREAU HOLDS 39TH ANNUAL MEETING IN NEW YORK

The Hospital Bureau of Standards and Supplies, 247 Park Avenue, New York, held its 39th annual meeting at the Hotel McAlpin in that city on February 24th. Clifton Mack, Director of the Bureau of Federal Supply of the U. S. Treasury Department, Washington, addressed the meeting on "Cooperative Buying for Institutions"

(Please turn to page 280)



METAL For your Products



Ample supplies of stainless steel and aluminum may be obtained for immediate use. G. P. & F. engineers will assist your engineers in the practical use of these metals for your products.

As you know, carbon steel is in short supply, however, G. P. & F. will work with you in a combined effort to obtain the necessary raw material.

G.P.E.F.

# GEÜDER, PAESCHKE & FREY FACILITIES ELIMINATE THE NEED FOR YOU TO ADD COSTLY EQUIPMENT

Simplify your production problems...reduce worries...add to profits...use the *overall* processing facilities of G. P. & F.'s "packaged service."

Before expanding your own production lines to make engine oil pans, fuel tanks, automotive and agricultural equipment parts, stainless steel stampings, machine safety guards, fabricated gear housings and other similar products, investigate Geuder, Paeschke & Frey's capacity for this work.

You can obtain complete units—made to your specifications—finished and ready for assembly! G. P. & F. are able to produce items ranging from enameled washing machine tubs to stainless steel fruit juicers.

G.P.EF

# GEÜDER, PAESCHKE & FREY OFFERS THIS SPECIALIZED EQUIPMENT FOR YOUR USE

- Presses to 300-ton capacities.
- Arch, gap frame, horning and inclinable presses from 10 to 200-ton capacities.
- Resistance, atomic hydrogen, heliarc and electronic induction welding and brazing.
- Hot dipped tinning, galvanizing and lead coating facilities.
- Synthetic enamel and paint finishing.
- A modern enameling plant with two continuous furnaces for vitreous enameling.
- Other facilities include a complete machine shop and tool and die department.

You may put these Geuder, Paeschke & Frey Co. production facilities to profitable use by having your planning and design engineers discuss metal manufacturing problems with the Contract Division. Write Dept. P.

GEUDER, PAESCHKE & FREY CO., MILWAUKEE 1, WISCONSIN

# DAGE FENCE-Since 1883

AMERICA'S FIRST WIRE FENCE .



# Consult a Specialist when you buy fence

• Protection of persons and property against common hazards is the specialized business of the Page Fence Association member near you. His long experience and the expertness of his organization, plus the high quality, varied styles and choice of metals provided by PAGE, make him the man to consult when considering chain link fence for any property. He will help you to select the right fence to meet your need and will submit cost estimates without obligation. Write for illustrated information and we will send name of the member nearest you. For name of nearest member firm, write to PAGE FENCE ASSOCIATION in Monessen, Pa., Atlanta, Bridgeport, Chicago, Denver, Detroit, Los Angeles, Philadelphia, Pittsburgh, New York or San Francisco

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE - BRIDGEPORT, CONN.

It positively ...



# KEEPS BOLTED ASSEMBLIES Permanently TIGHT

BEALL helical SPRING WASHERS have "live action" and constantly exert tightening pressure over a long range. They compensate for ALL causes of looseness including vibration, bolt stretch, wear and break-down of finish under the nut and bolt head.

IN STOCK in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur and Duronze.

SOLD THRU MILL SUPPLY JOBBERS

BEALL TOOL DIVISION (Hubbard & Co.)
130 Shamrock St., EAST ALTON, ILL.

BEALL SPRING WASHERS

#### HEALTH DIRECTOR SPEAKER AT MONTREAL ASSN. MEETING

The regular meeting of the Purchasing Agents Association of Montreal was held on Thursday, January 20 at the Mount Royal Hotel. In order to obtain adequate accommodations for the increasing membership it has been found necessary to change the night of the meeting from Tuesday to Thursday. The change will last only through May of this year, and in September the association will revert to its former meeting night of the third Tuesday of each month.

Guest speaker at the meeting was Doctor Adelard Groulx, Director of Health, City of Montreal, whose subject was "Health Conditions in Montreal in 1948".

The Research Clinic, under the leadership of Gordon Thom, met prior to the regular meeting. The subject of discussion was "What Place Has Reciprocity in Determining With Whom Business Is to be Placed?".

Entertainment featured the February 17 meeting of the association which was designated as "Ladies' Night". Dancing followed the dinner.

#### TEXAS PANHANDLE ASSN. HEARS RUBBER EXPERT

A regular meeting of the Purchasing Agents Association of the Texas Panhandle was held at the Blackstone Hotel in Amarillo on February 12. M. N. Diden, supervisor of the United States Rubber Company testing station at Dallas, was guest speaker. He also showed a film entitled "The Building of a Tire".

C. G. McLaren, vice president for District 2 of the National Association of Purchasing Agents, attended the meeting.

# PURCHASING AND PUBLIC RELATIONS AKRON ASSN. TOPIC

A regular meeting of the Purchasing Agents Association of Akron was held at the Woman's City Club on Tuesday evening, February 15.

Guest speaker was G. A. Bowie, lecturer, author and humorist, who is with the public relations department of the Firestone Tire and Rubber Company. Mr. Bowie's subject was "Apple Polish", and involved a discussion of public relations in reference to purchasing.

# EASTERN NEW YORK ASSN. PAST PRESIDENTS' NIGHT

The fourth annual Past Presidents' Night meeting of the Purchasing Agents Association of Eastern New York was held on Thursday, January 20, at Wolferts Roost Country Club, Albany, N. Y.

Commodity reports highlighted the program for the evening. Group singing was followed by the showing of a film on famous sports events by Connie Spuck.

The February 17 meeting was held at Circle Inn, Lathams, N. Y., and featured a discussion on cash discounts, led by Lee Hodgkins.

(Please turn to page 282)

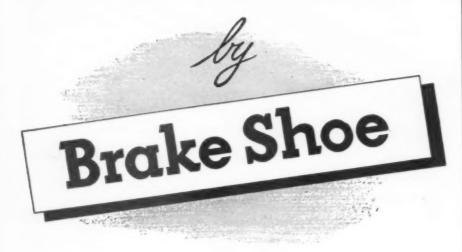


BESLY TAPS • BESLY TITAN ABRASIVE WHEELS BESLY GRINDERS AND ACCESSORIES BESLY

CHARLES H. BESLY & COMPANY, 118-124 N. Clinton Street, Chicago 6, Illinois
Factory: Beloit, Wisconsin

# Quality Meehanite®

# BAR STOCK



• In four grades of Brake Shoe Meehanite ® metal... in 35 different diameters ranging from 3/4" to 12"... in lengths of 14", 16" or 24" according to the diameter, Bar Stock by Brake Shoe is proving a practical answer to many a production problem. Its availability is important in many cases, its uniformity in all.

Bar Stock, while a standard item in one sense, is a high-standard item when supplied by American Brake Shoe Company. You can be sure of its structural soundness and physical properties.

Bar Stock by Brake Shoe includes grades of Meehanite metal ranging from 30,000 to 50,000 lbs. tensile strength. Send for price list.



BRAKE SHOE AND CASTINGS DIVISION 230 PARK AVENUE, NEW YORK 17, N. Y.

# FORT WAYNE ASSOCIATION FORMS PURCHASING CLASSES

Education classes in purchasing are now being conducted by the Fort Wayne Association of Purchasing Agents at the local YMCA. The classes began in January and will be held on the second and fourth Mondays of each month through April 25. The announced purpose of the course is to promote better purchasing personnel, purchasing policies and purchasing practices through education.

The annual "Steel Meeting" of the association was held on February 21, with an estimated attendance of 300. J. A. Ingwersen, Vice President of Armco Steel Corporation, Middletown, O. was the principal speaker. Other guests included N. J. Gibbins, Vice President for District 4, N.A.P.A., city officials Chambers of Commerce officials, and top management of industries in Fort Wayne and surrounding territories.

# "ELECTRIC POWER" TOPIC AT DALLAS MEETING

A regular meeting of the Purchasing Agents Association of Dallas was held at the Melrose Hotel on Thursday, January 13. Guest speaker was C. A. Tatum, commercial manager for Dallas Power & Light Co. Mr. Tatum spoke on "The Electric Power Situation in Dallas", and described his company's expansion plans for meeting the city's rapidly growing requirements for electricity.

# JACKSON GROUP ELECTS MORIN PRESIDENT

John P. Morin was reelected president of the Purchasing Agents Association of Jackson, Mich., at a recent meeting of the group. Other officers reelected were: Milton Howe, Index Machine Co., vice-president; Arthur Schultz, Kent Moore, secretary-treasurer. Directors are: R. B. Howlett, Macklin Co.; Herbert Ziegler, G & Z Automatic Products Co.; Harry Harmon, Yard Man, Inc.; and Lorris M. Russell, Consumers' Power Co.

# SOUTH BEND ASSOCIATION HEARS CONSTRUCTION EXPERT

A monthly dinner meeting of the Purchasing Agents Association of South Bend was held at the Christiana Country Club, Elkhart, Ind., on Wednesday, Febmary 9.

Guest speaker at the meeting was A. T. Waidelich, assistant director, research division of the Austin Company of Cleveland, O., and an authority on civil and structural engineering. Mr. Waidelich spoke on "Which Should Industry Buy—Floor Area or Production Space". His talk, illustrated with slides, was a broad approach to the building construction problem. He discussed the initial layout of the building and the economics of purchasing space of various types for different kinds of occupancy.

(Please turn to page 284)



Yes, the billion dollar office and school supply business of this country is definitely catering to the Pencil Pushers of America. They're bringing out a host of new products

— and most of these are packaged in the more sales-worthy set-up boxes. This year these manufacturers of pencil pushers supplies will buy more than 100 million set-ups.

Whatever your line of business investigate the many versatile advantages of set-up box packaging.

NATIONAL PAPER BOX MANUFACTURERS

AND COOPERATING SUPPLIERS

Liberty Trust Building

Philadelphia, Penn.





Whatever your hose connection requirement, there is a Wittek Hose Clamp to meet the need. Wittek Hose Clamps are made in many sizes and styles, and of various materials such as stainless steel, regular steel or brass. Each type of Wittek Hose Clamp is of proven design which assures dependable leakproof hose connection.

See Your Supplier or Write Direct

# 4330 W. 24th Place, Chicago 23, III. Dependability in Hose Clamps for Over

#### WASHINGTON ASSN. HAS ANNUAL TACOMA MEETING

The annual Tacoma Meeting of the Purchasing Agents Association of Washington was held in Tacoma, Wash. on Thursday, February 10.

The meeting opened with luncheon at the Top-of-the-Ocean, and was followed by a visit at the F. S. Harmon Manufacturing Company. After a session of bowling at the Tacoma Bowl later in the afternoon, a dinner meeting was held at The Towers.

Principal speaker at the meeting was Dr. Charles T. Battin, director, School of Business Administration, College of Puget Sound, whose subject was "The Future of Commercial Free Enterprise".

H. E. Haagen, Wheeler Osgood Co., and George H. Wilson, Atlas Foundry & Machine Co., were chairmen of the Tacoma committee in charge of arrangements. Assisting them were Arthur M. Angove, City of Tacoma; R. S. Gruver, Washington Hardware Co.; J. M. Law, St. Regis Paper Co.; T. E. Miller, Home Electric Co.; Eric Strommer, Hunt & Mottet Co.; Ferd Bondy, Tacoma Public Schools; Henry O. Walker, F. S. Harmon Mfg. Co., and Roy C. Hull, Du Pont Company

"Inventory and Inventory Control" was the subject at the fourth monthly education dinner meeting of the association, held at the Seattle Y.M.C.A. on Thursday evening January 27. Speakers in-cluded Watt Fallis, Kenworth Motor

(Please turn to page 286)

# Safe, Handy, Quiet FOLDING CHAIR



Formed steel seat and back. Triangular rein forced tubular steel frame; solid-steel cross braces Dipped, baked-enamel finish. Replaceable rubber feet.



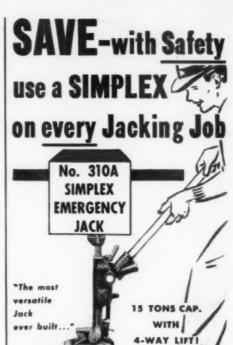
For every industrial need-in cafeterias, recreation rooms, or assembly rooms-this is the perfect folding chair! Safe-can't tip No snagging, pinching, or soiling hazards. Folds quickly and quietly. Light and compact, easy to carry and store. Easy on the budget, too. Write for full information.

Also with wood soat-American Folding Chair No. 44, same advantages plus five-ply, urea-resin-bonded hardwood seat, durably lacquered. (And No. 47, upholstered in brown imitation

# American Seating Company

WORLD'S LEADER IN PUBLIC SEATING Grand Rapids 2. Michigan

Branch Offices and Distributors in Principal Cities



· Save time and money on every job with this easy-to-use, Simplex Emergency Jack that is engineered for safety. Jack tilts on base for angular operation. Lifts full capacity on cap; on auxiliary cap shoe; on the machine serrated toe, or at any intermediate point by using chain as sling!

# RACHET LEVER JACKS

A Complete Line for Every Jacking Job!

#### Safe! Fast! Powerful!

11/2 to 35 Tons Cap!

For all general duty lifting, lowering, moving, leveling, skidding.

# SCREW JACKS

88% Easier Lifting! 4-Way or Ratchet Head Types!

31 Models-10 to 24 Tons Cap!

Single ball nested under cap won't flatten; cap can't slip. Friction reduced 88%. Malleable housings.



#### HYDRAULIC JACKS

Leakproof Neoprene Seals! 8 Models-3 to 100 Tons Cap! Tested to 50% Overload!

For shops, factories, construction, transportation and mine jacking.

SEND TODAY FOR BULLETIN: INDUSTRIAL 49



# Controlled Quality Builds Added Endurance

Available in Carbon, Stainless and Alloy Steels Ample strength and toughness are designed and forged into every Ladish fitting—providing a substantial margin of safety. Special emphasis on metallurgically sound materials and forging procedures... combined with advanced engineering ... and rigid manufacturing controls assures users of Ladish fittings a uniformly high standard of dependability.

A COMPLETE LINE PRODUCED UNDER ONE ROOF
... ONE RESPONSIBILITY

LADISH CO.

CUDAHY, WISCONSIN

DISTRICT OFFICES: New York • Buffalo • Pittsburgh • Philadelphia Cleveland • Chicago • St. Louis • Atlanta • Houston • Los Angeles

TO MARK PROGRESS

# Specify STROM BALLS



When you specify Strom Balls you aresure of getting balls with the highest

obtainable degree of finish, sphericity, precision—balls that give the very highest quality of service in any bearing equipment. This high degree of perfection is the result of Strom's concentration for a quarter of a century on metal balls exclusively and the perfection of the processes and workmanship necessary to produce them. Strom Steel Ball Company, 1850 South 54th Avenue, Cicero 50, Illinois.

before packaging

# BALLS @ Serve Industry

INDEPENDENT AND EXCLUSIVE METAL BALL MANUFACTURER



More than 50 years of leadership and experience in developing spe-cial purpose cloths for industry. With such a background of experience it is little wonder that Holliston Tracing Cloth is second to none. Try PEL-X.

# HOLLISTON PEL-X TRACING CLOTH HAS HIGH RESISTANCE TO MOISTURE

Holliston PEL-X positively will not make a water tight cap to wear under your bathroom shower. It never was intended for any such use - but PEL-X is highly resistant to moisture and perspiration.

Perspiration from a draftsman's hands or arms neither spoils a subject drawing, nor penetrates the special PEL-X finish which says to moisture -"keep out." Drops of water accidentally spilled on PEL-X Tracing Cloth may be wiped off without harm to the drawing.

Try PEL-X on your own drawing board. Liberal sample sent on request.

THE HOLLISTON MILLS, INC.
CHICAGO NORWOOD, MASS.
NEW YORK



(Continued from page 284)

Truck Corp., speaking from the manufacturer's point of view and M. C. Michener, Cragin & Co., speaking from the jobber's point of view. Albert D. Schinnerer, E. J. Bartells Co., and a member of the association's educational committee, was chairman of the meeting, and Prof. Arthur Cannon of the University of Washington participated as coordinator and summarized the discussion.

# TWIN CITY ASSOCIATION **ELECTS NEW OFFICERS**

G. R. Arneson, City of Minneapolis, was recently elected president of the Twin City Association of Purchasing Agents for the coming year. Other officers chosen include the following:

Paul F. Trapp, Curtis 1000 Inc., St. Paul, Minn., vice-president; Basil L. Nelson, Northern States Power Company, St. Paul, secretary-treasurer; H. C. Powell, Minnesota Mining & Mfg. Company, St. Paul, national director.

Directors are: R. A. Nentwig, Superior Metal Products Co., St. Paul; W. R. Sprague, American Hoist and Derrick Company, St. Paul; Robert Bateman, Geo. A. Hormel and Company, Austin, Minn.; and A. H. Carlson, U. S. Rubber Company, Minneapolis.

The first meeting of the association under the administration of the new officers was held at the Minneapolis Athletic Club on February 9. Feature of the program was a sound color moving picture entitled "Watts In Glass", produced by the Owens-Corning-Fiberglas Corporation. John R. Read of the company gave a short talk and demonstration on Fiberglas materials.

#### PERMANENT MAGNETS TOPIC AT ROCHESTER BUYERS MEETING

A regular meeting of the Rochester Association of Industrial Buyers was held at the Normandie Hotel on Wednesday, February 9. Guest speaker was C. A. Maynard, director of research and engineering of the Indiana Steel Products Company. Mr. Maynard, who has been active in this type of work for 15 years, assisting manufacturers to improve current products and develop new ones, spoke on "Permanent Magnets-Their Uses and Applications and What They Can Do for You and Your Products".

# 1 1 1 NEW ENGLAND ASSOCIATION HOLDS PLANT VISIT

Members of the New England Purchasing Agents Association visited the plant of the Dewey & Almy Chemical Company, Cambridge, Mass., on Tuesday, February 1. The company operation is of a diversified nature and includes the manufacture of containers, sporting goods, toys, adhesives, acetates, water proofing and many other items. Austin Secor, a member of the association, is the company's Purchasing Agent.

(Please turn to page 288)

# MEASURING SATISFACTORY PERFORMANCE



# ... IN EVERY TEST!

# QUAKER PACKINGS ARE "PRE-TESTED" TO ASSURE PERFECT FIT, LONG LIFE, MAXIMUM EFFICIENCY

Packings to be efficient must be perfect in fit . . . must form a tight seal in pumps, flanges, valve stems, piston rods to prevent leaks . . . must be of exact quality to meet the operating requirements of specific conditions.

That's why Quaker Packings are "pre-tested." Carefully calipered for size and fit . . . painstakingly checked for quality. Above we see the final test, one of many pretests Quaker Packings must go through before they are ready for usage. Tests that are safeguards against costly leaks, troublesome shutdowns, loss of production.

There's a Quaker packing for every type of servicewater, air, gas, oil, acids at extreme temperatures . . . all pre-tested for better performance.



## HOSE THAT LASTS

. . because it has been pre-tested to stand pressure and resist wear. Quaker Hose is available for use with air, water, steam, volatiles, acids and gases.

#### FOR PEAK HORSEPOWER

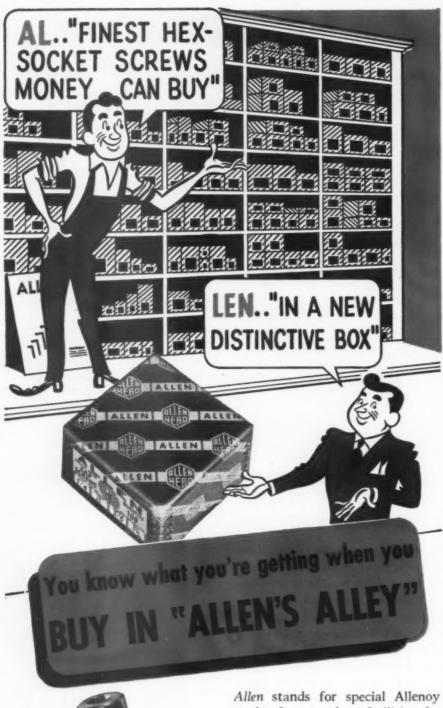
Quaker belts are pre tested for every industrial need . . . belts of all kinds that assure peak efficiency under all operating conditions.



#### QUAKER RUBBER CORPORATION

PHILADELPHIA 24, PA. - New York 7 - Cleveland 15 - Chicago 16 - Houston 1 Western Territory QUAKER PACIFIC RUBBER CO. + San Francisco 10 - Los Angeles 21 - Seattle 4





steels, for complete facilities for threading by any method, for the latest forming and heat-treating techniques, for quality control, and advanced engineering. You get all these advantages in one package, if you make sure that package is the new black *Allen* package with the silver stripes.

SOLD ONLY THROUGH LEADING DISTRIBUTORS



#### ALABAMA ASSN. HOLDS ANNUAL BUYER-SELLER NIGHT

The second annual Seller-Buyer Dinner of the Purchasing Agents Association of Alabama was held on February 17 at the Thomas Jefferson Hotel, Birmingham, Ala. Members of Alabama selling organizations were the guests of the association at the meeting, which was "dedicated to the fine relationship that exists between sellers and buyers of this section" in the words of Herschel A. Wilson, president.

The meeting also marked the 21st anniversary of the association, which was founded in 1928, and was known at the time as the Birmingham Association.

Approximately four hundred people attended the affair. Dinner was followed by a short program of talks by representatives of purchasing and top management, Principal entertainment of the evening was a floor show by professional talent.

# COLLEGE DEAN GUEST AT GEORGIA ASSN. MEETING

1 1 1

A regular meeting of the Purchasing Agents of Georgia was held at Brittain Hall, Georgia Tech, in Atlanta, on January 21. George Griffin, dean of students at Georgia Tech, was the guest speaker.

# # # # HAMILTON DISTRICT MEETING

The regular monthly meeting of the Purchasing Agents Association of Hamilton District was held at the Royal Connaught Hotel, Hamilton, Can., on February 16. Guest speaker was the Rev. Canon A. T. F. Holmes, B.D. who spoke on TOC-H, the Interdenominational Society. A plant visit to the International Silver Co. Canada Ltd. was held in the afternoon.

# TRI-STATE ASSOCIATION MEETS

A regular meeting of the Tri-State Purchasing Agents Association was held on Wednesday, February 16 at Farmer's Hotel, Gallipolis, O. Feature of the program was the showing of a sound picture "Rail Steel in the World of Today" through the courtesy of the West Virginia Steel & Mfg. Co.

## CANADIAN COUNCIL CONFERENCE SET FOR OCTOBER

Announcement was made at recent meeting of the Purchasing Agents Association of Montreal that the 1949 conference of the Council of Canadian Purchasing Agents Assns. is scheduled to be held in Hamilton October 14 and 15. Principal speaker at the meeting wa Dr. Adelard Groulx, director of health, City of Montreal, whose subject was "Health Conditions in Montreal in 1948." The association roster now shows a membership of 353.

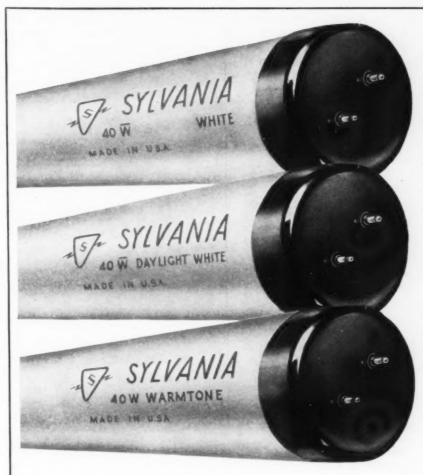
(Please turn to page 290)

If the shelves in your distributor's

hex-socket screw section display

288

# LAST FAR LONGER ... GIVE FAR MORE LIGHT THAN EVER BEFORE



• Unless your plants have converted 100% to the new extra-life fluorescent lamps now available from Sylvania Electric, you may be missing an opportunity to make sizable reductions in your annual lamp expense.

Due to exclusive chemical developments, Sylvania is now in a position to offer you its lamps with longer life and higher lumen-output than ever before ... and at no premium in price.

Tests-in our own laboratories and in actual consumer installations over the past 18 months-are the basis for these very positive claims. Your own tests will also verify them.

If you are interested in greater value for your fluorescent lamp dollars, we'll be glad to supply you further interesting information. Write, or use the coupon below.

Sylvania Fluorescent Lamps are made in sizes and colors for every commercial and industrial need. Your particular attention is called to Warmtone—the first fluorescent lamp to approach the color-tone of incandescent illumination.

FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES: ELECTRIC LIGHT BULBS: PHOTOLAMPS: RADIO TUBES: CATHODE RAY TUBES: ELECTRONIC DEVICES

MARCH, 1949

Want Additional Product Information? See Page 19.

Company Address

Sylvania Electric Products Inc. Department L-7503

500 Fifth Ave., New York 18, N. Y.

Gentlemen: Please furnish additional information on the extra-life fluorescent lamps described in Purchasing. My approximate annual

289



VENICE, ITALY - A CITY OF 300,000- HAS NO AUTOMOBILES. THAT'S PROBABLY THE WORLD'S ONLY LARGE CITY THAT HAS NO USE FOR AUTOMOTIVE SERVICE EQUIPMENT, MADE BY ACCO'S MANLEY DIVISION.

ACCO Products Include: AMERICAN Chain . TRU-LAY and LAY-SET Preformed Wire Rope • TRU-LAY Cable and TRU-LOC Swaged Terminals for Aircraft • TRU-STOP Emergency Brakes • PAGE Wire, Chain Link Fence and Welding Rods • CAMPBELL Abrasive Cutters . READING-PRATT & CADY Valves and Fittings . READING Steel Castings · PENNSYLVANIA Lawn Mowers · MARYLAND Bolts & Nuts · "ROCKWELL" Hardness Testers • WRIGHT and FORD Hoists • HELICOID Pressure Gauges • MANLEY

Automotive Service Equipment . OWEN Silent Springs. AMERICAN CHAIN & CABLE BRIDGEPORT

### BANQUET CLIMAXES ANNUAL CHICAGO ASSN. PRODUCT SHOW

The annual Members and Advertisers Products Show of the Purchasing Agents Association of Chicago was held in the Hotel Sherman on February 15, 16 and 17. The affair was climaxed on Thursday, February 17 by the annual banquet.

The banquet speaker was Re". Laurence Hall, noted as a dynamic and outstanding humorist, who is the pastor of Christ Episcopal Church in Cincinnati. Reverend Hall's subject was "He Who Laughs Last".

Harold A. Moore, senior vice president of Chicago Title and Trust Company, acted as toastmaster. A program of musical entertainment was also presented.

M. J. Hartigan, Joseph T. Ryerson & Son, Inc., was chairman of the products show. Robert L. Krueger, Goodman Mfg. Co. was chairman in charge of exhibits. and Donald L. Harwood, Fairbanks, Morse & Co., co-chairman in charge of exhibits

### "MEDICAL SUPERSTITIONS" WASHINGTON ASSOCIATION

A regular meeting of the Purchasing Agents Association of Washington, D. C. was held in the Burlington Hotel on February 8, with President K. M. Pardoe

Guest speaker was Dr. James A. Gannon, chairman of the Medical Society of the District of Columbia Committee on Public Relations, on the subject "Medical Superstitions". A round table discussion by members on "Purchasing Problems" was also featured.

### TORONTO ASSN. SPONSORS 2ND EDUCATIONAL COURSE

The second educational course sponsored by the Purchasing Agents Association of Toronto, under the direction of the University of Toronto Extension Course has been in operation since the first class on January 11.

Lectures have already been held on psychology, business law, public relations in purchasing, inventory control, and the responsibilities of a purchasing agent.

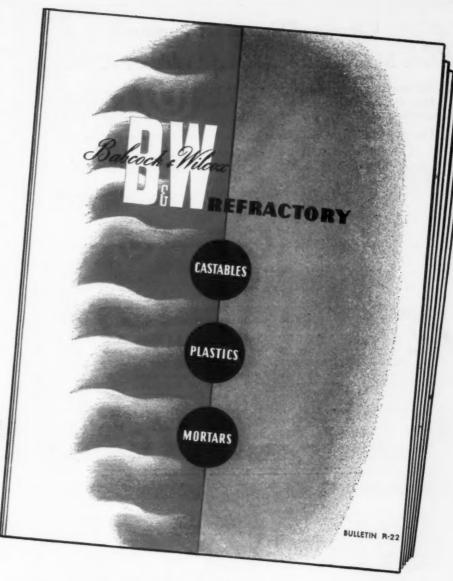
Balance of the program is as follows: March 1 and 8—"Economics". Wm. C. Hood, M.A., Ph.D., department of political economy, University of Toronto. March 15—"Business Cycles". Julian Davies, The N. Slater Company, Limited, Hamilton. March 22-"The Tools of Purchasing". B. H. Yardley. The Stanley Works of Hamilton Limited, Hamilton. March 29-"Buying Commodities". Steel, Geo. Davis, Plate & Structural Steel Sales Ltd., Toronto; paper, L. Tolson. Maclean-Hunter Publishing Co. Ltd., Toronto; coal, Ian McLaren, The Rochester & Pittsburgh Coal Co. (Canada) Ltd., Toronto.

Fee for the 12 lectures is \$5.00.

The February 9 meeting of the association was held in the Royal York Hotel, and was designated "Members and Outof-Towners' Night."

What to use...
Where to use it!

# NEW B&W BOOKLET



Here, for the first time, is a handy reference booklet summarizing significant data and application information for a wide range of important refractory materials:

. . . A complete section on Refractory Castables, including the new outstanding B&W high temperature materials that are establishing new standards in furnace construction and maintenance.

... Data on Refractory Plastics . . . what they

are, their properties, when to use them.

... A thorough review of Refractory Mortars, together with convenient tables for selecting and determining quantities.

Furnace designers and builders looking for ways to reduce first cost... furnace owners and operators seeking longer furnace life, less maintenance, increased output... will all want this convenient bulletin. Your copy of Bulletin R-22 is waiting for you... write for it today.

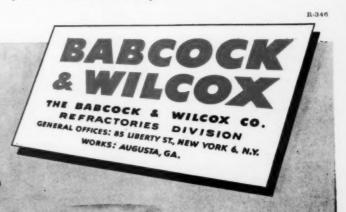


### BAW REFRACTORIES PRODUCTS

BAW 80 FIREBRICK . BAW JUNIOR FIREBRICK
BAW 80 GLASS TANK BLOCKS . BAW INSULATING FIREBRICK
BAW REFRACTORY CASTABLES; PLASTICS AND MORTARS

### OTHER BAW PRODUCTS

Stationary & Marine Boilers and Component Equipment
Chemical Recovery Units... Seamless & Welded Tubes... Pulverizers
Fuel Burning Equipment... Pressure Vessels... Alloy Castings



### Cleveland Container Products Serve Many Purposes and Fields of Activity

All are quality products . . . rightly priced . . . rapidly produced. Our Creative Design and Engineering Departments are at your service.

For the latest data and ideas check the items of interest to you.

\_\_\_\_\_ Spirally wound Tubes, Cores and Cans.

All fibre and combination fibre and metal cans.

\_\_\_\_ Friction plug, slip cover, screw cap containers.

Paper thread protectors for male threads (tubes) for female threads (plugs).

\_\_\_ Paper discs.

\_\_\_\_ Kraft and fish paper tubes for coil forms and condenser covers.

Cosmalite—spirally laminated paper base phenolic tubing for the electrical industry.

Your inquiry will be given immediate attention.

May we serve you?

## The CLEVELAND CONTAINER Co 6201 BARBERTON AVE. CLEVELAND 2, OHIO • All-Fibre Cans • Combination Metal and Paper Cans

All-Fibre Cans Combination Metal and Paper Cans
 Spirally Wound Tubes and Cores for all Purposes
 Plastic and Combination Paper and Plastic Items

PRODUCTION PLANTS also at Phymosth, Wisc., Oglassiang, N.Y., Chicago, Nil., Datroil, Mich., Jameshurg, N.J.,
PASTICS DIVISION at Phymosth, Wisc. — ABRASIVE DIVISION at Cleveland, Obio
SALES OFFICES: Room 5632, Ganda Central Term. Oldg., New York 17, N.Y., also 647 Main 53. Kartierd, Comm.
CANADIAN PLANT: The Cleveland Container Canada, Ltd., Prescott, Ontario







SKIDDING MACHINERY



One man lifts or pulls loads up to 10,000 lbs. with the AMERICAN HANDIWINCH. Simple, rugged, weighs only 95 lbs. Carries easily, sets up anywhere. Cut steel gears, two gear ratios. Has demountable tail yoke. Triplewidth drum model also available. Sold everywhere; made by AMERICAN HOIST AND DERRICK CO., ST. PAUL 1, MINNESOTA.

ALSO MAKERS OF GENUINE CROSBY CLIPS AND AMERICAN BLOCKS AND SNEAVES.



### KALAMAZOO MEETING

A meeting of the Purchasing Agents Association of Kalamazoo was held on Thursday noon, January 13, at the Columbia Hotel. Two movies were shown through the courtesy of the Anaconda Wire and Cable Company, "Copper", and "Nerves of the Nation".

### PUBLICATION ON ADVANCES IN PRINTED CIRCUITS

Printed circuits have emerged from the experimental stage and have become a practical technique for mass production of electronic devices. As a result of increasing interest in this rapidly developing electronic art, a technical symposium was held last year by the Aeronautical Board's Aircraft Radio and Electronics Committee under the technical supervision of the National Bureau of Standards. Twenty-two invited papers were presented on the status, applications, and limitations of printed circuits. The proceedings of the symposium have been published in a booklet, New Advances in Printed Circuits, which is now available from the Superintendent of Documents.

Topics presented by representatives of industry and Government laboratories include the status of printed circuits; conductive silver preparations, printed resistors; trends in military communication; vitreous-enamel dielectric products; printed electronic components on glass, plastics, and other nonconductors; imprinted circuit inlays; spraying techniques; mechanization of electrical wiring; diestamped wiring; and typical commercial applications. The booklet concludes with a summary of the subject and a discussion of the important technical questions raised in the symposium.

New Advances in Printed Circuits. NBS Miscellaneous Publication M 192; 18 chapters, 73 two-column pages, 43 illustrations, 6 tables; available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., 40 cents per copy.

### OXYGEN INHALATOR FOR FIRST AID ROOMS

Administration of oxygen to gassed or shocked persons is said to be simplified by new Oxygen Demand Inhalator announced by Scott Aviation Corp., Lancaster, N. Y. The inhalator can also be used in the administration of oxygen to "heart cases" after resuscitation. Completely portable, if attached to C, D, or E cylinders, it can also be attached to larger oxygen cylinders. Functioning is completely automatic. No adjustments are necessary to administer 100% oxygen or mixtures of oxygen with other gases. The oxygen flows only on inhalation. A "safety valve" permits air to be drawn into the mask if the oxygen supply should become exhausted. The unit is designed as a supplement to and not as a substitute for resuscitators or manual resuscitation. It is described in detail in bulletin #519.

# **ALOYCO GATE VALVES**

## earned leadership the hard way

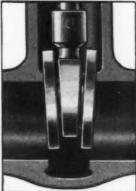
Some manufacturers earn leadership—some just claim it. ALOYCO GATE VALVES have gained and held their leadership by toil and sweat, mixed with hard thinking, on the problems of corrosive-fluid pipe lines, exclusively.

This leadership has been earned by sound, service-proven design ... by foundry craftsmanship that produces uniformly dependable castings ... by seasoned experience in the selection of the optimum alloy for specified corrosive conditions ... by skilled machine shop practice that insures utmost mechanical efficiency in the finished valve.

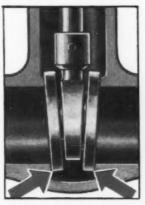
You can have the best. Why run the risk of costly replacement tie-ups with anything less?



Completely fool-proof parts.



Floating discs can rotate, for even wear on the parts.



Direct acting—stem thrust through wedge rings seals the ports.



Double valve protection—complete shut-off at two points.





SCREWED AND PLANGED PITTINGS

ALLOY STEEL PRODUCTS COMPANY, INC.

1312 WEST ELIZABETH AVE.

LINDEN N. I

SALES OFFICES: ATLANTA; CHICAGO; HOUSTON;

### PERSONALITIES in the NEWS

### Duffy To Direct Ford Purchasing



Irving A. Duffy

Irving A. Duffy has been appointed Director of Purchasing for the Ford Motor Company, Dearborn, Mich., according to an announcement by D. S. Harder, Vice President—Manufacturing, on whose staff he will serve.

The post of director has been vacant since the death of Albert J. Browning in July 1948. Mr. Duffy will direct overall purchasing functions. C. F. Unruh will continue as Ford General Purchasing Agent and H. H. Foster will continue to serve the Lincoln-Mercury Division in the same capacity.

Mr. Duffy comes to the Ford organization from International Harvester where he served as assistant to the vice-president, directing the co-ordination of their post-war expansion program in both plant and equipment. In 1947 he was appointed as director of wage administration.

A retired colonel in the regular Army, Mr. Duffy was born in Chicago in 1904, later moving to Buffalo where he attended local schools. He entered West Point in 1922 and upon graduation was assigned to duty with the Cavalry.

In 1928 he entered the Law School at Columbia University and two years later joined the faculty at the Military Academy as an instructor of law. After four years at West Point, Mr. Duffy served a tour of duty in Hawaii, returning to this country in 1937 to re-enter law school and obtain his degree. After passing the New York bar he was assigned to Washington in the Judge Advocate General's Department and immediately entered the industrial mobilization picture. For the following two years he worked with the staff of the War Department in developing legislation pertaining to industrial mobilization and followed the proposals through Congress.

In 1940, Mr. Duffy was assigned to the Ordnance Department of the Army to help in the creation of large special purpose ordnance plants which have no counterpart in peacetime. In helping to set up this three billion dollar program, he was directly concerned with purchasing and procurement policies of the Ordnance Department, These policies and the accompanying functional organization were later widely copied in Army procurement generally.

This activity brought Mr. Duffy in close contact with industrial leaders all over the country and particularly in Detroit. His close cooperation with industry during this period played a considerable part in co-ordinating production with needs. Mr. Duffy left his work with a broad practical grasp of procurement and administrative problems and their solution.

In his capacity as chief of the legal division of Ordnance, Mr. Duffy was active in the contract renegotiation program and then in termination procedure for government contracts.

After a tour of duty overseas in both theaters in 1945, Mr. Duffy returned to join John W. Snyder's Office of War Mobilization and Reconversion. He served as special assistant to General Campbell. Chief of Ordnance. Mr. Duffy retired from the Army in 1946 to join the International Harvester Corporation.

Kenneth W. Short has been named Purchasing Agent for Monsanto Chemical Company's Plastics Division at Springfield, Mass. The announcement of the appointment was made by C. A. Wolfe, Vice President and Director of Purchases and Traffic. Mr. Short has been acting purchasing agent for the division since October 1, when Glenn M. Bullard retired

Mr. Short, senior buyer for the division since 1942, had been assistant purchasing agent since August of last year. He joined the receiving department of the Fiberloid Corporation, which later became Monsanto's Plastics Division, in 1924, and was transferred to the purchasing department in 1933.

George C. Mercer, Purchasing Agent for P. R. Mallory & Co., Inc., Indianapolis, Ind., is teaching an evening course in purchasing at Butler University, Indianapolis.

(Please turn to page 296)

# SUN OIL COMPANY

A trade-mark of Sun Oil Company

A COMBINATION HYDRAULIC OIL AND WAY LUBRICANT

LUBEWAY was developed in cooperation with leading machine tool builders for use in metalworking equipment in which the way lubricant is force-fed from the hydraulic system. Lubeway has been thoroughly "Job Proved" in industry. Send for free booklet containing complete information about this new product.

SUN OIL COMPANY . Philadelphia 3, Pa. In Canada: Sun Oil Company, Ltd., Toronto and Montreal Sun Oil Company, Dept. PU-3 Philadelphia 3, Pa.

Please send me your informative booklet on the new "Job Proved" Sun Product - LUBEWAY.

Name\_

Company\_

Address\_

Zone\_\_\_ \_State\_

SUN PETROLEUM PRODUCTS - STORE -

"JOB PROVED" IN EVERY INDUSTRY



L. S. MacKay has been appointed Director of Purchases for Kaiser-Frazer Corp., Willow Run, Mich.



L S MacKay

He moves up from his former position as Assistant Director of Purchases which he held since September 1947. Prior to that appointment he was purchasing agent in charge of production buying for K-F.

Mr. MacKay came to K-F after several years as a purchasing executive with Blaw Knox Company of Pittsburgh.

When Blaw Knox received a government contract in 1941 to design, engineer, procure materials and construct manufacturing plants for the national synthetic rubber program, Mr. MacKay headed procurement buying for the two-year project.

After discharging this assignment as an executive of the company's Chemical Plants division, he was director of procurement from 1943 to 1946 for the Martins Ferry (Ohio) division which produced 40 MM. Bofors guns.

Mr. MacKay studied mechanical engineering at Carnegie Institute of Technology.

Horvey C. Hopkins, General Manager of Purchases since 1944, has been named Vice President of the American Can Company, New York, N. Y. in charge of Purchasing and Traffic. He assumes the duties of the lat: Albert R. Pfeltz, who died January 4.



Harvey C. Hopkins

Mr. Hopkins joined Canco in 1925 as a research chemist at Maywood, Ill. Three years later he was transferred to the manufacturing department in the Chicago office, and in 1930 he became assistant supervisor of the enameling and decoration division for the central division. He later held the same post in the Atlantic division.

He was made assistant manager of the enameling and decorating divison for the entire company in 1936, manager the following year, and General Manager of Purchases in 1944.

R. C. Fost has been named Purchasing Agent for the Stanolind Oil & Gas Company's North Texas-New Mexico division, succeeding T. Massengill, who has resigned. Mr. Fast's headquarters will be in Fort Worth, Tex.

Theodore R. Blessing has been named Acting Purchasing Agent of the Beryllium Corporation, Reading, Pa.

John S. Conont has been appointed as Director of Procurement for Willys Overland Motors, Toledo, O., according to an announcement by James D. Mooney, President and Board Chairman. Mr. Conant has been the company's General Purchasing Agent for the past six months. Prior to that time he was a consultant with Technical Managers Inc., in New York City.



John S. Conant

He served as a Naval Lieutenant in the advance base section of naval operations as well as in the Inspection Administration Division Office of the Secretary of the Navy and in the Logistics Organizaton Planning Unit.

From 1940 to 1943 he was general supervisor of production planning and priorities administrator for the American Steel and Wire Co. of Cleveland, O. For eight years preceding his service there. Mr. Conant was successively procurement director, chief industrial engineer and production manager at Johns Hopkins University.

Mr. Conant was educated in Baltimore, Md. schools and received a degree in mechanical engineering from the University of Pennsylvania in 1931.

Frank W. Pettit, Assistant to the General Purchasing Agent, has been named General Purchasing Agent of the Western Maryland Railway Company, Baltimore, Md. He succeeds Merle E. Towner, who retired recently after nearly 33 years' service with the company. J. S. Eaton succeeds Mr. Pettit.

Everett A. Taylor, former Purchasing Agent of Providence Gas Company who was recently made Coke Sales Manager for the company, has been made an honorary member of the Rhode Island Purchasing Agents' Association, of which he was once president.

J. A. Schultz has been appointed Purchasing Agent for the new Atomic Power Division of the Westinghouse Electric



J. A. Schultz

Corporation, Pittsburgh, Pa., according to an announcement by Andrew H. Phelps, Vice President of the company.

Mr. Schultz was graduated from Northeastern University in Boston with the degree of Bachelor of Mechanical Engineering in 1939. He joined Westinghouse in 1938 and since then has served in various purchasing assignments, including that of buyer at the East Pittsburgh plant, purchasing agent at the Mansfield, O. works, and most recently as a member of the headquarters purchases and traffic department staff in Pittsburgh.

Corson L. Foggy has been appointed Purchasing Agent of the Burlington works of the J. I. Case Company, Burlington, Iowa. He succeeds Carl S. Steward who was recently transferred to the Rockford works. Mr. Foggy has assisted Mr. Steward for the past six years in the operation of the Burlington Purchasing Department.

Robert J. Seybold has been appointed Assistant Purchasing Agent of the Westinghouse Transformer Division at Sharon, Pa., according to an announcement by Andrew H. Phelps, Vice President of the company. Mr. Seybold will be responsible for general supervision of all purchasing department personnel.

Mr. Seybold's employment with Westinghouse dates from July 1941, after his



Robert J. Seybold

graduation from the University of Pittsburgh, when he was employed in the purchasing department at East Pittsburgh. He has served as a buyer at the Canton Naval Ordnance Plant and the Transformer Division. Since 1945 he has been a section supervisor in the Transformer Division's Purchasing Department.

(Please turn to page 298)



You probably weren't thinking of years of service. You bought your aluminum snow shovel because it was so light, so easy to handle. Nature made aluminum light. But a lot of other things had to happen to make aluminum that would *last*.

Alcoa made those things happen.

A snow shovel needs strength, as well as corrosion resistance. It cost millions to find the right alloys of aluminum for that. Alloys strong as steel, that could be rolled into sheet, for blades; drawn into tubes, for handles; made into rivets, to join them.

Sounds like a lot of work to make a better snow

shovel. Hundreds of Alcoa research people working thousands of hours on alloys . . . hundreds of others spending years on fatigue tests, tensile tests, corrosion tests. But it enables us to say . . . "Alcoa Aluminum lasts!". . . and mean it.

That means more than just better snow shovels. It means better automobile parts. Better stepladders. Garage doors. Awnings. Screens and storm windows. All the things that didn't use to last, unless you painted them well and often.

That makes things of Alcoa Aluminum worth looking for. Worth buying. ALUMINUM COMPANY OF AMERICA, 1908 Gulf Building, Pittsburgh 19, Pa.

ALCOA.

first in Aluminum

THE METAL THAT



### Are YOU the one who doesn't know

# FEDERAL makes every type of Indicating Gage?

Wide, continuous experience gave us the know-how to design gages that produce better quality at lower cost.

You may know that Federal makes more Dial Indicators and Dial Gages than any other manufacturer. But, note this too—the entire Federal Plant is devoted exclusively to the design and production of every type of Indicating Precision Instrument by the latest scientific methods.

We engineer and make Automatic Sorting Gages, Signal and Automatic Control Gages, Continuous Measuring Gages in great variety to control dimensional accuracy as wanted.

We have made gaging devices for controlling the dimensions of every sort of article from wire staples to railroad splice bars, from sausage skins to jet engines; gages that do jobs people said couldn't be done.

Take advantage of the practical savings secured from these gages. The proper gage, properly applied, costs nothing. It collects money on saved scrap and eliminated operations.

For data on any of these gages write to Gaging Headquarters— Federal Products Corporation, 1106 Eddy St., Providence 1, R. I.



ELECTRONIC-AUTOMATIC SORTING — The ultimate in 100% gaging — fast, stable, accurate. Engineered to your product,



Dial Indicators • Indicating Gages Special Gages • Electronic and Automatic Sorting Gages • Air Gages A. W. Bornhauser, at one time Purchasing Agent for Jones-Dabney Company, Louisville, Ky., a division of Devoe & Raynolds Co., Inc., has been elected president of the company. Mr. Bornhauser started with the firm as an office boy.

Betty M. West, Assistant Purchasing Agent of the Dearborn Stove Company of Dallas and Chicago has been named Purchasing Agent of the company, according to Roy M. Liestrand, president.



Betty M. West

Miss West became associated with the Dearborn organization in January 1946 as Assistant Purchasing Agent. She was previously associated with the Universal Corporation of Dallas, where she held a similar position.

Russell Shoffer has been named to succeed Clarence J. Cukr, who has resigned as Purchasing Agent for Johnston & Jennings Co., Cleveland, O.

Robert Hobson has succeeded Gil Winship, resigned, as Purchasing Agent at the Foote-Burt Company, Cleveland, O.

Richard H. Bennett has been promoted to the position of Director of Purchases for the Brunswick-Balke-Collender Company, Chicago, Ill., makers of bowling and billiard equipment and supplies.



Richard H. Bennett

Mr. Bennett has been associated with Brunswick for five years, serving as production control manager and more recently as staff assistant to the manufacturing manager at the company's Muskegon, Mich., factory. A graduate of Massachusetts Institute of Technology, he was formerly a purchasing executive for the Westinghouse Electric Corporation.

Joseph S. Hines has been appointed Purchasing Agent at the Universal Drafting Machine Company, Cleveland, O.

(Please turn to page 300)

### ARMSTRONG Drop Gorged EYE BOLTS



Specify ARMSTRONG Drop Forged Eye Bolts for extra strength—correctly engineered proportions, forged-in quality, uniformity of design in all sizes and the best mild steel, heat treated to increase tensile strength. Built to tool standards, not hammered out as "tonnage" forgings, "they always carry their load safely."

Stocked by Armstrong distributors, with or without shoulders, threaded or as blanks in 16 sizes (openings from 3/4" to 4" i.d.).

Write for New S-48 Catalog, just released.

ARMSTRONG BROS. TOOL CO.

5203 W. Armstrong Ave.
Chicago 30, U. S. A.
New York San Francisco



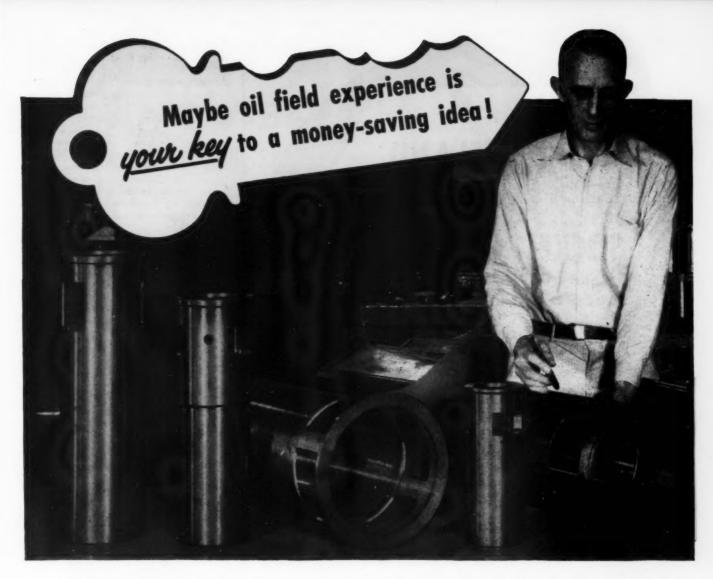
• The set-up or rigid paper box with the extra strong stayed corners is still retailing's prize salesman. In a wide variety of shapes, sizes and styles, OLD DOMINION Set-up Boxes have the extra push to stimulate buying because they are styled to merchandise your product. Why not send your product for our

Write for folder on Set-up Boxes, #15.

OLD DOMINION

Oct Company Inc.

CHARLOTTE, N. CAROLINA



THE bronze parts shown above are pump liners. Soon they'll be in tough, continuous service, mostly in the oil fields. Here, strength, wear-resistance, uniformity, and freedom from imperfections are especially important! Oil field experience proves that these liners have those very qualities in extra measure! Here's why:

These parts, like thousands of others of many types, were first cast centrifugally by the Shenango-Penn process, then finish-machined in the modern Shenango-Penn shops. This process cinches many advantages... such as finer, pressure-dense grain, an 8 to 20% increase in tensile, exceptional resistance to wear and distortion, up to 30% greater elongation, positive relief

from sand inclusions and blow holes, and big savings in metal and machining time.

What symmetrical parts, big or little, ferrous or non-ferrous, go into the machinery you build or use? How about bushings, bearings, liners, sleeves, rolls, roll covers, rings, cylinders, tubes or similar items? Shenango-Penn engineers welcome the chance to show you how you can combine better performance with savings in time and money...right from the blue-print stage on through!

### SHENANGO-PENN MOLD COMPANY 2472 WEST THIRD STREET . DOVER, OHIO

Executive Offices: Pittsburgh, Pa.

### FREE BULLETINS

No. 143—Centrifugal castings of non-ferrous metals and alloys.

No. 144—Centrifugal and static castings of plain and alloyed irons.

No. 145-Centrifugally cast bushing stock in all standard sizes.



ALL BRONZES • MONEL METAL NI-RESIST • MEEHANITE METAL



W. H. Jones, division superintendent of the Philadelphia Electric Company, at Morton, Pa., has been named Purchasing Agent for the utility.

Mr. Jones joined the company following his graduation as a mechanical engineer from Cornell University in 1926. His first employment was as a junior engineer. He later became, successively, gas superintendent and electric superintendent at Morton and division superintendent at Coatesville. He was transferred to the post of division superintendent at Ardmore in 1939, and has been division superintendent at Morton since 1943.

William D. Randall has succeeded Edward O. Murray as Purchasing Agent at the Johnstown (Pa.) Plant, Bethlehem Steel Company. Mr. Murray who had been with the company for 28 years, recently retired. Mr. Randall had been Assistant District Purchasing Agent.

Julion J. Fourrier has been appointed acting Purchasing Agent of the city of Baton Rouge, La.

Bruce C. Miller has been appointed General Purchasing Agent of Fram Corporation, Providence, R. I. He succeeds David C. Buell, who has been named General Production Manager.



Bruce C. Miller

Mr. Miller, formerly manager of the Otsego, Mich. plant, came with Fram Corporation as assistant to the president in 1945, following discharge from the Army Air Force. He will make his headquarters at the company's general offices in East Providence.

Eldred A. Cayce, Vice President and Director of Purchasing for the Ralston Purina Company, St. Louis, Mo., has been elected president of the Merchants' Exchange of that city.

T. O. English, Assistant General Purchasing Agent, Aluminum Company of America, Pittsburgh, Pa. was a speaker at the conference sponsored by the materials handling and management divisions of the American Society of Mechanical Engineers, held in conjunction with the Materials Handling Show in Philadelphia, Pa. recently. His topic was "The User Talks to the Sales Engineer".

Lee Dowson, Jr. has been appointed Purchasing Agent and L. M. Russell, Jr. Assistant Purchasing Agent for Pioneer Air Lines, Houston, Tex.

(Please turn to page 302)

Ask your jobber for Cleveland Fasteners

Grip the Sides of

### ANY V-Belt

FEEL the Sides CHANGE SHAPE

as the belt Bends -



# THE CONCAVE SIDE

(U. S. PATENT NO. 1813698

### SAVES YOU MONEY

### Bend any V-Belt and you can actually feel its sides change shape.

That's because the bending puts the top of the belt under tension, while the body undergoes compression. Naturally the sides of the belt bulge out—and if the belt is built with straight sides, you get the result shown in Figures 1 and 1-A, below:—





How Straight-Sided V-Belt Bulges in Sheave-Groove

Clearly, the bending forces a straight-sided V-Belt into a shape that does not fit the sheave-groove—and the bulging produces excessive wear along the *middle* of the *sides*.

Now, bend the V-Belt built with the precisely

engineered Concave Side (U. S. Patent No. 1813698)—the Gates Vulco Rope.

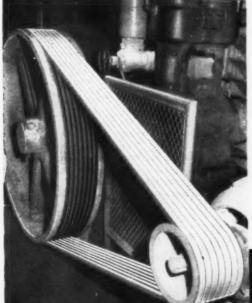




No Side Bulge Precise Fit in Sheave Groove

You get the same shape change but now the new shape exactly fits the sheave-groove as shown in Figures 2 and 2-A.

Results—(1) Uniform side-wall wear; longer life. (2) Full sidewall grip on the pulley; carries heavier loads and sudden load increases without slippage—a big increase in drive efficiency—saving belt wear and also saving power!



### The Concave Side is MORE IMPORTANT NOW Than Ever Before

Because the sides of a V-Belt are what actually drive the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley directly through the belt's sidewalls.

Now that Gates <u>SPECIALIZED</u> Research has made available to you SUPER Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side naturally delivers greater savings today than ever before.

THE GATES RUBBER COMPANY DENVER, U. S. A.

The World's Largest Makers of V-Belts

Sates ALG. U.S. DAT COS

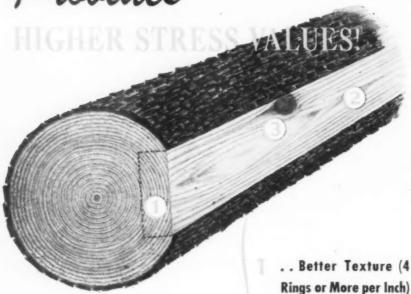
The Mark of SPECIALIZED Research

492

# GATES VULCO DRIVES Engineering Offices IN ALL INDUSTRIAL CENTERS of the U.S. and and Jobber Stocks. IN ALL INDUSTRIAL CENTERS of the U.S. and Jobber Stocks.

### Improved

for SOUTHERN PINE Provides



HERE ARE THE VITAL IMPROVEMENTS IN THIS GRADE

This close-up spotlights the improved grading standards for No. 2 Dimension which afford higher quality and new cost economies in this grade of Southern Pine framing material for residential and light commercial construction.

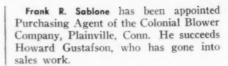
From every standpoint, this new grade is a decidedly better material than its predecessor. Its greater strength is known, because it carries definite working stresses . . . a feature previously available only in a higher grade at a higher cost.

### SEND FOR NEW GRADING RULES-FREE

This constructive improvement is fully detailed in the new 1948 Southern Pine Grading Rules. Your copy and the helpful Grade Use Guide will be mailed promptly on request.

Quality Southern Pine Is Available, Now!

Southern Pine Association



Robert L. Gunnell was recently re-elected Purchasing Vice President of The Rapids-Standard Co., Inc., Grand Rapids, Mich., at the annual meeting of the board

David P. Jones has been appointed Purchasing Agent of the Valve Pilot Corporation, New York, N. Y. He was formerly with Curtiss Wright, Bloomfield, N. J.

W. P. E. Ainsworth remains as General Purchasing Agent and Production Manager following the merger of the Combustion Engineering Company with the Superheater Company to form Combustion Engineering-Superheater, Inc., New York, N. Y.

John W. Bush has been appointed State Purchasing Agent of Ohio, with headquarters at the capital in Columbus, to succeed Berne Jeager.

Ralph T. Cusato, George W. Fry, and William V. Stucker have been appointed managers in the Purchasing Division of the RCA Engineering Products Department, Camden, N. J., by H. M. Zimmerman, Purchasing Agent of the department.

Mr. Cusato, an RCA buyer has been named acting manager of the mechanical buying section; Mr. Fry, manager of electrical buying, has been transferred to the post of manager of the sub-constracting section; and Mr. Stucker has been promoted from buyer to manager of the electrical buying section to succeed Mr.

Irwin M. Koenigsberg, Purchasing Agent for the Emerson Radio & Phonograph Corp., New York, N. Y., is a member of the instructional staff for the Management Program being offered by the Evening and Extension Division, City College School of Business, New York, during the 1949 spring term.

Warren J. Sieg has been appointed Purchasing Agent for the Hough Shade Corporation, Janesville, Wis., according to an announcement by John E. Hough, president. He succeeds Carl W. Hanke, who resigned to accept a sales position with the Hoerner Corporation, Keokuk, Iowa. Mr. Sieg, a veteran of World War II, had acted as Assistant Purchasing Agent since joining the Hough organization in 1946.

IDLE SURPLUS IS IDLE CAPITAL! CONVERT IT TO CASH . . . LIST YOUR COMPANY'S SURPLUS IN PURCHASING'S CLASSIFIED SECTION NEXT MONTH SEE PAGE 360

WRITE for this data TODAY

Bending Stress 1,100

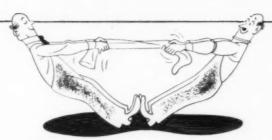
Pounds per Sq. In.

. . Smaller Edge Knots



These are "Trying" Times

-be sure to try it before you buy it!



The Pull-the-Leg Test. You should see what a woman's stocking goes through before it reaches a leg. Wow! Snagging tests, abrasion tests, flexing tests, bursting tests, dye and fiber tests. But after all, it makes sense. Quality is determined only by test.



The Lye Test. Don't let anyone "pull the wool" over your eyes. If you want to make sure a fabric is all wool, simply boil a small piece of it for about fifteen minutes in a solution of lye and water. If the fabric dissolves completely . . . well, it was all wool.

The Sleep-Like-a-Log Test. They use a mechanical Rip Van Winkle to test the quality of a mattress. Back and forth, back and forth a heavy eight-sided roller passes over the mattress. If the mattress can stand up under 400,000 passes, you can be sure it's one of the best.

### The Square Foot Test

One of the surest tests to find the best and most economical brand of paint to use in your plant is the square foot test. Take a gallon of any good paint and a gallon of Barreled Sunlight. Thin each according to directions on the cans. Then measure the number of square feet each paint covers on a wall. And, because labor represents about 80% of the cost of any painting job, check the length of time it takes to apply each paint. Notice the difference in their whiteness and hiding power after drying overnight.

Yes, compare any good paint with Barreled Sunlight. You'll see that Barreled Sunlight will do a better-looking, longer-lasting job at lower cost for both paint AND LABOR than any other paint on the market.

See for yourself. Let your nearest Barreled Sunlight representative give you a convincing demonstration. Write.

U. S. GUTTA PERCHA PAINT COMPAN 18-C Dudley St., Providence, R. I.

# Barreled Sunlight



a Barreled Sunlight Pr nt for every job



HOW do you save money with the Triner Airmail Scale? Here's an example: Your clerks mail many letters and parcels near the borderline for extra postage. Rather than take chances, they add extra stamps. Only five extra 3¢ stamps a day cost you \$45 a year! But with positive Triner Balance, you know the correct postage to a hairline.

The Triner Scale was specially designed for the U. S. Postal Dept., where 190,000 are in use right now. The big mail order houses, too (who yearly mail millions in goods) use Triner extensively. Choose your own accurate Triner Scales from 15 models.

### Triner eliminates costly "Zone of Uncertainty"



Hairline accuracy because: 1. Deep-notched beam cuts human error. 2. Easy-to-read pointer shows exact postage. 3. Alloy steel pivots are heat-reated and ground. 4. Self-aligning bearings give lasting balance. 5. Built of steel for durability.



You	get	full F Sc West	fac	ets &	at Mfs	no	ol Co.	olig . I	ati	on	W.		te
NAM													
ADD											 		
CITY	ř								TA			**	

### AMONG THE COMPANIES YOU BUY FROM

Akron, O.—The B. F. Goodrich Company. J. R. Thompson has been named manager of flat belting, conveyor, elevator and transmission belting in the Industrial Products Sales department of the company and Paul W. Van Orden manager of "V" belts and packing.

Chicago, III.—Fairbanks, Morse & Co. O. O. Lewis, formerly assistant sales manager has been promoted to sales



O. O. Lewis

manager. Harry L. Hilleary has been transferred from the St. Louis branch here to become assistant sales manager.

Tulso, Oklo.—Tube Turns, Inc. Ardun Company has been appointed distributor of Tube-Turn welding fittings and flanges.

Notick, Moss.—Robert Gair Company. Thomas E. Cathcart, Jr. has been appointed New England sales manager for folding cartons. He will make his head-quarters at the company's plant here.

Hingham, Mass.—W. Arthur Smith, Jr., formerly engineering sales manager of Carlyle Johnson Machine Co., has resigned to operate in New England as a manufacturers' representative. He will institute operations in New England for the Wel-Met Company, Kent, O.

Dallas, Tex.—Morse Twist Drill Company. A new branch office has been opened at 1903 South Harwood St. James W. Cathey is in charge.

Worcester, Moss. - Norton Company. Ralph M. Johnson has been appointed vice-president in charge of sales. He was



R. M. Johnson

formerly vice-president and general sales manager for the company's abrasive division.

(Please turn to page 306)

STEEL

# TUBES

FOR INDUSTRY SINCE 1845



Boiler Tubes — All Types Expanders & Fittings

Stay Tubes — Marine
Upset & Expanded

Condenser & Heat Exchanger Tubes

Locomotive Tubes to A. A. R. Specs.

Pipe Size Pressure Tubing

Mechanical Tubing Seamless & Welded

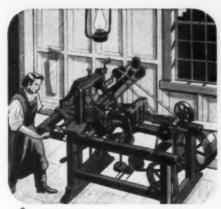
Stainless Steel Tubing Standard & Extra Heavy

Special Analysis Tubing

Through the facilities of our affiliate, the Murray Tube Works, we are equipped to fabricate tubes to your specifications



A B MUI	RR	AY COINC							
Since 1845									
P.O. Box 476 Elizabeth, N.J.		Versailles Mc Keesport, Pa							
Write for current	TUBE	STOCK BULLETIN							



1865—Here's how machines lookedbefore man applied electricity for industrial usage. Gear setups were crude. Making parts fit was a matter of luck and plenty of tinkering by operators.



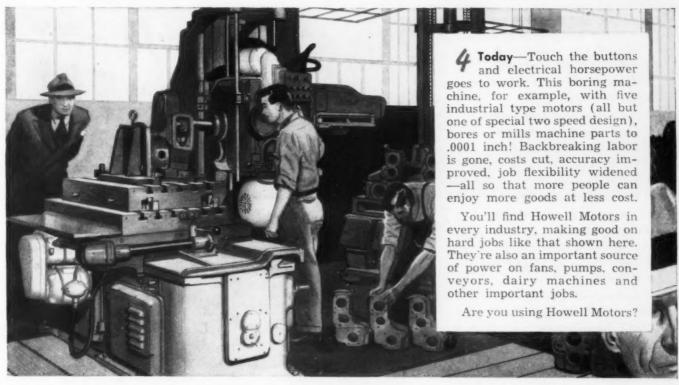
2 1907—Electrical horsepower gave production a big boost. But gear mechanisms were far too cumbersome. Repairs were frequent. Men were still struggling to make one motor do the work of many...



3 1915—Howell "Red Band" Electric Motors arrived. These rugged, industrial type motors were specially designed to withstand hard usage. Soon, Howell Motors appeared in this and other industries.

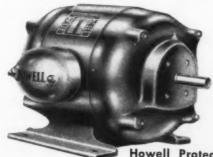
### NOW, IT'S TOUCH AND GO!

(and parts are machined quicker and to closer tolerances)



Free enterprise encourages mass production, supplies more jobs - provides more goods for more people at less cost.

Here's another precision-built Howell Motor . . . industrial type with copper or bronze bar rotors . . . specially insulated . . . statically and dynamically balanced.



### HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Manufacturers of Quality Industrial Type Motors Since 1915

**Howell Protected Type Motor** 



You abrasive buyers—you're the best pals a guy ever had! You latched onto our RED COAT Abrasives and hung onto them like a puppy to a root.

DISCS

But more! You told your friends about them—how they CUT BETTER, LAST LONGER . . . And sales boomed!

You made it possible for us to open a second big modern plant—just for fabricating Michigan RED COAT Abrasives . . . So, "Thanks a Million!"

And say—if YOU haven't bought these famous RED COAT Abrasives—



today—Samples that let you SEE and FEEL the difference.

IN EVERY TYPE YOU WANT! (Supplied in Belts, Discs, Rolls and

(Supplied in Belts, Discs, Rolls and Sheets—paper or cloth backed—in Silicon Carbide, Aluminum Oxide, Garnet—in full range of standand grit sizes.)

MICHIGAN ABRASIVE CO. 2360 W. Jefferson Ave., Detroit 16, Mich.



Houston, Tex.—Colorado Fuel and Iron Corp., Wickwire Spencer Steel Division. E. L. Klingler will direct the sale of Wickwire rope in the mid-continent area—Houston, Abilene, Texas, and Tulsa, Okla.

New York, N. Y.—Chase Bag Company. R. V. Bradley has been appointed sales manager of the company's eastern paper



R. V. Bradley

bag division. He is succeeded as manager of the New York sales office by W. J. Newhouse.

Cleveland, O.—Terry Machinery Co. C. R. Terry, for several years sales engineer for the Hydraulic Press Manufacturing Co., has organized the new company, with headquarters in the Hanna Building, as a sales agency for metal working machinery.

New York, N. Y.—Clippard Instrument Laboratory. Rocke, Inc., 13 E. 40th Street, has been appointed sales representative in metropolitan New York area, northern New Jersey and Connecticut.

Philodelphio, Pa.—Clark Hopkins Equipment Corp. James I. Ferris has been named sales manager.

Detroit, Mich.-BullDog Electric Products Co. Robert N. Blatchford has been



Robert N. Blatchford

appointed sales promotion manager. Mr. Blatchford, who has been with the company since 1940, was previously assistant advertising manager.

Philodelphia, Pa.—Pennsylvania Flexible Metallic Tubing Company. James R. Derrick has been appointed assistant sales manager.

Jersey City, N. J.—Culbert Pipe & Fittings Company. James S. Weaver has become associated with the company as special sales representative in the New York territory.

(Please turn to page 308)

### Would you like to have the opportunity to slash your spring costs?



HE KEY to lower spring costs is in design and manufacture. Perhaps in your own case, a small modification in design which would not affect your product's performance would make it possible to substantially reduce the cost. Or maybe your springs are being made in several operations when one would suffice. Skilled springmakers here at Accurate have the experience the "know-how" - to recognize such conditions and to correct them! Our manufacturing facilities are modern and complete - we have the equipment to do the job right, at the lowest cost to you.

We would welcome the opportunity to show you what we have done for others and point out what we can do for you. Write, wire or phone, today; your inquiry will receive prompt attention.



A dependable source of supply!

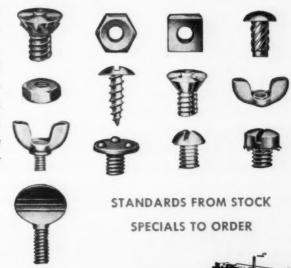
ACCURATE SPRING MFG. CO. 3825 W. Lake St. • Chicago 24, III.



From the clamp adjusting screw on roller skates, to the adjusting screws on your auto brakes...or the many Central Phillips recessed screws that line your interior trim, down to the copper contact bolt that starts your car... Central is a leading producer. In fact, Central screws are found on everything that rolls . . . cars, skates, tractors, mowers . . . kiddie carts. TWO HIGH SPEED PLANTS-one East, one West, simplify your purchases and speed your deliveries ... fast!

Fast DELIVERIES ...

FROM CENTRAL'S 2 BIG PLANTS





3501 SHIELDS AVE., CHICAGO 9, ILL. . 149 EMERALD STREET, KEENE, N. H.

### He didn't forget...

### He just took a chance!



When workers risk their eyes, with disastrous results to both themselves and the company alike, it's time to look into the cause of unsafe practices.



Goggle Style TAW51

Willson answers the problem of getting safety equipment worn by designing the utmost comfort into their entire line of eye and respiratory protective devices. The goggles illustrated have eyecups that are molded to fit the bony structure around the eyes. The chain bridge and elastic headband are adjustable for comfortable fit. And the Super-Tough\* lenses meet or exceed Federal Specifications for optical clarity as well as impact resistance.





Such as Willson "Blind Man" Safety Posters keep workers aware of the need for wearing goggles. Supplies available on request.

\*T M Reg II S Pat Offi

WILLSON PRODUCTS, INC., 221 WASHINGTON STREET, READING, PENNA.











Troy, N. Y.—Behr-Manning Corporation. John M. Cook, manager of the abrasive sales division has been appointed to the board of directors of the company.

Milwaukee, Wis.—Gaylord Container Corporation. R. S. Updyke has been named general manager of the Milwaukee operations, and Glenn B. Elliott sales manager.

Munsfield, O.—Ohio Brass Company. l.ouis J. Ott has been appointed general sales manager of the company. R. A. LeFevre succeeds him as advertising manager.

Conton, O.—Timken Roller Bearing Company. Seward T. Salvage has been made sales promotion manager of the company. He was formerly assistant district manager of industrial bearing sales.

Buffolo, N. Y.—Grinnell Company, A branch warehouse and sales office has been opened at 1374 Clinton Street. The branch will carry a complete stock of



H. J. Meinhold

plumbing, heating and industrial supplies. H. J. Meinhold, sales engineer at the company's Cleveland branch since 1940, has been appointed branch manager.

Seattle, Wash.—General Electric Apparatus Department. A new and expanded apparatus service shop has been opened here, staffed by factory-trained engineers and technicians to give round-the-clock service to users of motors, turbines, generators, etc.

Mount Gileod, O.—The Hydraulic Press Mfg. Company. John M. Dolan has been appointed vice-president in charge of sales. He was formerly vice-president (sales) of the LeRoi Company of Milwaukee, Wis.

St. Louis, Mo.—Columbia Chemical Division, Pittsburgh Plate Glass Company. Brooks M. Dyer has been appointed St. Louis district sales manager.

Chicogo, III.—Inland Steel Company. Derrick L. Brewster has been appointed an additional assistant district sales manager of the company's district sales office here.

Portland, Ore.—Chase Bag Company. James W. Wells has been appointed sales manager of the company's branch here.

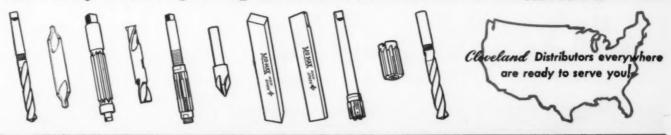
(Please turn to page 310)

# Here's a Tip

### On DRILLING PLASTICS



ASK YOUR | NDUSTRIAL S UPPLY D ISTRIBUTOR FOR THESE AND OTHER CLEVELAND TOOLS









Burbank, Colif.—Aerol Co. New business offices of the company are at 2820 Ontario Street, here. Aerol products will still be manufactured at the Los Angeles plant.

New York, N. Y.—Shell Oil Company. Dr. R. T. Goodwin has been named manager of the company's special products department.

Machinery Corporation. Frank J. Whelan, vice-president, is now supervising the sale of welding positioners and turning rolls.

Detroit, Mich.—General Electric Company. The Apparatus Department has established a separate sales district for the state of Michigan. A. R. Hines has been named manager.

Sharon, Pa.—Westinghouse Electric Corporation. C. H. Bartlett has been appointed manager of power transformer sales of the Transformer Division.

Fresno, Colif.—Graybar Electric Co., Inc. B. R. Cole has been named manager of the company's branch here.

Ludington, Mich.—Gits Brothers Manufacturing Company. The company has appointed Frank A. Kovarik, general sales manager, to establish and manage a new branch office here.

Dollos, Tex.— Lunkenheimer Company. Elmer R. Tierberman has been transferred here from the Tulsa headquarters, and will cover northeastern Texas, northern Louisiana, and part of Arkansas. Duffie Davis succeeds Mr. Tieberman at Tulsa.

Chicago, III.—Norton Company. John N. Brickman, formerly field engineer, has been appointed abrasive engineer in an additional territory recently created here.

Appleton, Wis.—The Foxboro Company. A new branch office has been opened at 123 W. College Ave., with Milton A. Schreiner as manager.

Chicogo, III.—The Billings & Spencer Company. Edward F. Hallissey has been transferred to the sales department of the company's office here.

Pittsfield, Mass.—General Electric Company. James W. Raynolds, former vice-president of the Sun Chemical Co., has been named sales manager of silicone products for GE's chemical department.

New York, N. Y.—Allend Hollander Co., Distributorship for the company's line of fork lift trucks and industrial towing tractors has been granted to Bond Industrial Equipment Co., 51 Clarkson St.

Toledo, O.-McQuary, Inc. Phillips-Fruth Company, 538 North Erie Street, has been named representative to handle the company's heating and air conditioning products.

New York, N. Y.—Allend Hollander Co., Inc. Milton F. Antoville has been named vice-president in charge of sales.

(Please turn to page 312)



### KITCHEN-WISE MANUFACTURERS ARE WEIRZIN-WISE, TOO for very good reasons!

Products that are fabricated from Weirzin have a "head start" on the road to success because of their basic sales advantages.

Bonderized Weirzin's affinity for paint, enamel and lacquer assures an excellent appearance, with less danger of the finish checking, chipping or

being damaged by constant cleaning. And Weirzin-built products are protected against unsightly and damaging corrosion of exposed metal parts.

The kitchen-wise manufacturer is wise to the fabricating advantages of Weirzin, too. It will not rust or corrode in stock . . . it requires no pickling or buffing before fabrication, nor prime coating before finishing.

Products that require extensive deep-drawing, forming and punching are "naturals" for Weirzin electrolytic zinc-coated sheet or strip.

# WEIRTON STEEL CO.





-/ MATIONAL STEEL CORPORATION, EXA

# If It Involves Wiring

DISTRIBUTOR FIRST See Your IDEAL for cost-cutting TOOLS and PRODUCTS

It costs you LESS to use the BEST wire connectors

The simplest, safest way to make approved wire connections. Used for

SCREWS ONlike a nut on a bolt

the New IDEAL

Tripmaster

Light-Pressure, One Squeeze Oper-

ation—Revolutionary "Automatic"

Feature Prevents Crushing of Wire.

The easiest-to-use hand-type wire stripper on the market! One light-pressure squeeze strips wire clean and bare up to full ½ inch. Exclusive and revolutionary "automatic" feature holds jaws open while wire is removed — positively prevents crushing. Compact — weighs only 10 oz.—practically abuseproof. Perfect for assembly line use. Ask your IDEAL Distributor to show it to you today.

Whether it's for production, maintenance or circuit wiring, "Wire-Nuts" are preferred over all other types because they're FASTER, BETTER -and they cut wiring costs. Faster-just screw them on that's all. No solder, no tape, no tools. Better - because they make a connection that's stronger mechanically, electrically better and more permanent. Can't pull or shake loose. Safer-because they're fully insulated-wire ends covered. Sizes for all common wire combinations.

FISH TAPE, REEL and PULLER



Cuts "fishing" time 50%. Gives complete control of tape . . . keeps it reeled up . . prevents springing or breaking . . helps workmen avoid "live" parts. Makes it a "breeze" to pull tape through conduit. Gives big grip. No slipping—easy to reel in or pay out. Six stock sizes.

IDEAL **B-X ARMOR** CUTTER



Makes B-X cable cutting SAFE. Eliminates hacked and torn fingers -cut and damaged insulation. No other tool like it! Just snip, twist BX and pull it apart. Cuts two or three No. 10, 12 or 14 cable armor, large or small diameter. Blade is removable for sharpening. End of tool serves as wire cutter.

"Hand-Type" WIRE STRIPPER

Safer-Gives two-way

IDEAL VOLTAGE TESTER

Protection

Not an ordinary "glo" type tester. Provides twoway protection
—a solenoid indicator and a
neon test lamp. Actually indi-

Actually indicates nominal line voltage on easy - to - read scale, calibrated from 110 to 600 volts. Test AC or DC circuits—grounds—blown fuses —frequency, etc. Dozens of uses in any plant. Complete with carrying case.

Distributed Through America's Leading Wholesalers

IDEAL INDUSTRIES Inc., Sycamore, Illinois

Lansing, Mich.-Graybar Electric Company, Inc. J. D. Akers has taken over the duties of manager of the company's branch here.

Tulsa, Okla.-Macwhyte Company. H. S. Dersheimer has joined the company as direct factory representative. He will have his headquarters here and will travel in Oklahoma and parts of Arkansas, Kansas and Wyoming.

Chicago, III.-Paisley Products, Inc. Herman Liberman has been appointed field engineer, specializing in the firm's



Herman Liberman

line of non-warp and flexible animal glues. He has been with the Chicago plant as sales representative for many years.

Mineola, N. Y.-Kelite Products Company Division of Goble Aircraft Specialties, Inc. Edward M. Lammi and Lawrence A. De Mellier have been appointed supervising engineers. Mr. Lammi was for many years purchasing agent for All American Airways in Pittsburgh,

Chicago, Ill.-The Black & Decker Mfg. Co. The Chicago sales and service station of the company has been moved to a new building at 1100 W. Jackson Bou-

### **INDUSTRIAL** DEVELOPMENTS

Oakite Products Company, Inc., New York, N. Y., developers of industrial methods and cleaners, is marking its fortieth anniversary. The company maintains a nationwide field service organization of 180 technical representatives, and supplies more than 80 specialized compounds for cleaning and related opera-

The Electric Auto-Lite Company, Toledo, O., has announced an extensive expansion program of the wire and cable production facilities. The company's newest wire plant at Hazelton, Pa. will be in operation in May.

Foxboro Company, Foxboro, Mass., has begun an addition to its building in Pittsburgh, Pa., for the assembling of control valves and for warehousing an increased stock of valves and instru-

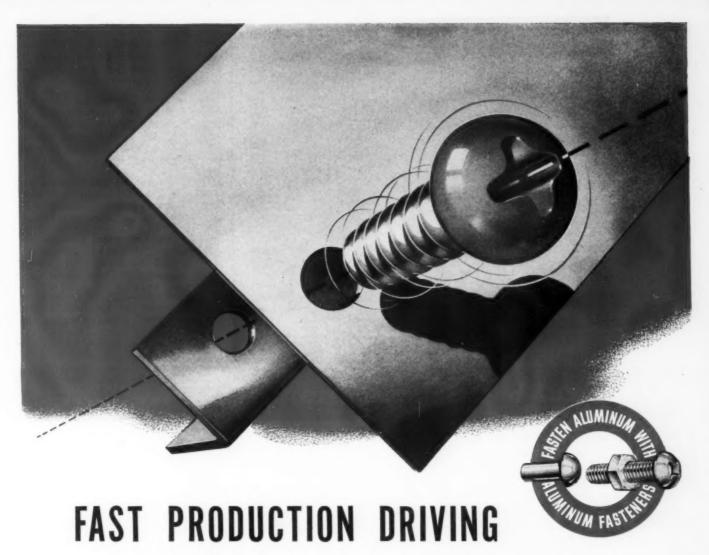
(Please turn to page 314)



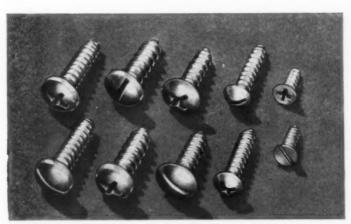
FIVE

MODELS FOR ALL

WIRE



### with Alcoa Aluminum Phillips Head Screws



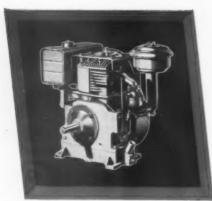
FREE! Samples of Alcoa Aluminum Fasteners sent free when you request them on your letterhead. Specify type and size you'd like.

Phillips heads add a big production plus—fast, slip-free power driving—to all the natural advantages of aluminum fasteners; corrosion resistance all the way through, bright modern appearance, light weight. And at prices that will surprise you.

Alcoa Aluminum Fasteners make possible strong, tight joints with aluminum assemblies. They prevent the galvanic action that can result when dissimilar metal screws are used to fasten aluminum.

Alcoa Aluminum Screws are available in sheet metal, wood and machine screws, standard sizes and lengths, in all popular head types. Other aluminum fasteners, too: hex head bolts, washers, hex nuts, cap nuts, wing nuts, castle nuts, in standard sizes and threads. Aluminum Company of America, 619 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA Oluminum FASTENERS



"Sreferred" Air-Cooled Power

# Get America's No.1 Power Value Briggs & Stratton

You get greater value, dollar for dollar, when your equipment is powered by Briggs & Stratton 4-cycle, single-cylinder, air-cooled gasoline engines!

No. 1 in design, workmanship, and materials. No. 1 in performance, economy, and durability. No. 1 in quality and availability of service. That's why Briggs & Stratton powered equipment gives better service and greater satisfaction.

These sturdy, compact engines are No. 1 with manufacturers, dealers, and users alike because they know that these precision-built engines run smoother, last longer, with less operating cost. Specify America's preferred power — Briggs & Stratton — for your gasoline engine power requirements.

BRIGGS & STRATTON CORP., Milwaukee 1, Wis., U. S. A.



The Dow Chemical Company, Midland, Mich., has announced completion of new facilities expanding its phenol capacity by 30 million pounds per year. The new plant is now in production.

Niogora Alkali Compony has announced the construction at Niagara Falls, N. Y. of a new plant for the production of trichlorethylene, a chlorinated solvent widely used in industry, chiefly as a degreasing and metal cleansing agent.

The Wheeler Insulated Wire Company, Inc., is moving from Bridgeport to Waterbury, Conn., where larger, more modern facilities will be available.

Rauland-Borg Corporation, Chicago, Ill. has purchased the Sound Division of The Rauland Corporation, a wholly owned subsidiary of Zenith Radio Corporation.

Chrysler-Amplex has completed a new plant in Detroit, Mich., providing for



New Chrysler-Amplex plant

larger production of Oilite heavy-duty, oil cushion bearings, finished machine parts, filters, friction units and bar stock.

The Republic Supply Company of California, jobbers and manufacturers of industrial and oil well supplies, has opened a new \$1,250,000 home office headquarters and main company warehouse in Los Angeles.

Mathieson Chemical Corporation, New York, N. Y. has purchased the business and assets of Southern Acid & Sulphur Company, Inc., St. Louis, Mo.

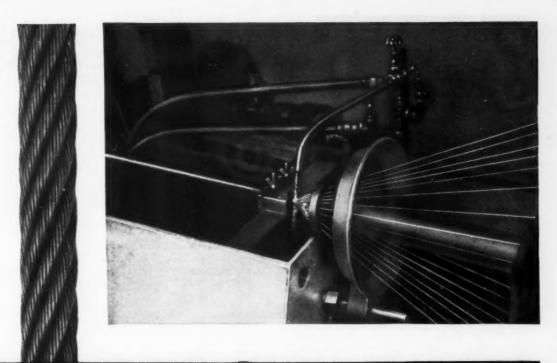
Kenmore Metals Corporation, New York, N. Y., manufacturers of nickeled steel wires, is increasing its plant capacity approximately four times through the acquisition of a long term lease on the property formerly occupied by American Brake Shoe Foundry, Jersey City, N. J.

Kenwell, Inc. is a new firm recently organized in Grand Rapids, Mich., as a sales organization for marketing products of miscellaneous manufacture under the Kenwell label. The first product will be an automatic bottle disposal unit called the Dispos-O-Mat.

American Optical Company, Southbridge, Mass., has purchased a six-acre tract at Stamford, Conn., including a 13,000-square foot building, to create a laboratory in the expansion of its research program.

Acro Electric Company, Cleveland, O. manufacturers of rolling spring Snap Action switches, has been purchased by a group of Pittsburgh people, including Williard F. Rockwell, Jr., president of the Rockwell Mfg. Co. F. G. McCloskey is the new Acro president.

(Please turn to page 316)



### Hot Oil Treatment for Steel Muscles

### THIS 82-PAGE BOOK ON WIRE ROPE IS FREE. WRITE FOR YOUR COPY TODAY!

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Mass.



Field lubrication of wire rope does much to prevent friction and corrosion and should not be neglected. However, it is only a *surface* treatment. To provide proper *internal* lubrication, every strand of Wickwire Rope is actually formed in a stream of hot, quick-setting lubricant which packs the many spaces between the wires of the strand.

Fiber cores, too, are saturated with a compound that lubricates the strands after the rope has been put in service. This built-in protection is the result of years of study to develop a lubrication system that would afford protection against factors which bind ropes and result in loss of strength and rope life.

Thorough lubrication is only one step in the quality control of Wickwire Rope manufacture—but we at Wickwire believe that *every* step is important to assure finished rope that will provide the utmost in performance, safety and long life.

Wickwire Distributors and Rope Engineers are always ready to help solve your wire rope problems and supply the right rope for your needs. Wickwire Rope is available in all sizes and constructions, both regular lay and WISSCOLAY *Pre*formed.

### WICKWIRE ROPE



A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT-Palmer, Mass.

EXECUTIVE OFFICE-500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Fort Worth • Houston • New York • Philadelphia • Tulsa
PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California



RAILS and track accessories



WRITE WIRE FOSTER

### 1 TON OR 1000

EVERY SINGLE ITEM AS SHIPPED BY POSTER IS WARRANTED TO BE REPRESENTED . . . AND IS SUBJECT TO PURCHASERS INSPECTION AND APPROVAL AT DESTINATION.

### PROMPT SHIPMENTS FROM FIVE WAREHOUSES

PITTSBURGH; CHICAGO; AMSTERDAM, N. Y; DELAWARE, N. J; HOUSTON, TEXAS

### PURCHASERS PLEASE NOTE:

46 years of customer satisfaction are solidly behind Foster Piling, Rails, Track Accessories, Pipe and Wire Rope . . . always sold under the Foster guarantee. Foster's dependable service continues during periods of scarcity. Five strategically located sales offices are ready to serve you.



The Industrial Products Sales division of the B. F. Goodrich Company has become the Industrial and General Products division and now includes Plastic Products sales and production departments.

American Latex Products Corporation, Los Angeles, Calif., has begun construction on a three-unit group of new factory and general office buildings in Lawndale, Calif.

Robert Gair Company, Inc., New York, N. Y., manufacturers of folding cartons and shipping containers, has purchased the business and properties of M. S. Dowd Carton Company, Groton, Conn.

Superior Steel Corporation, Carnegie, Pa. has completed and put into operation a new 20" continuous hot strip mill to replace two older mills.

Nottingham Steel Company has completed an addition to its warehouse in Cleveland, O., adding over 15,000 square feet to existing facilities.

The John Nooter Boiler Works Company, St. Louis, Mo. has purchased major items of equipment from the Mount Vernon, Ill., plant of J. P. Devine Division, H. K. Porter Co., Inc., as part of a \$500,000 expansion program.

Swift & Company's Technical Products Plant at Hammond Ind. has begun operations in the new industrial oil processing unit.

The Sperry Corporation, New York, N.Y., which since 1945 has owned fifty per cent of Wright's Automatic Machinery Company, has purchased the remaining common stock in the Durham, N. C. firm, pioneer developer and manufacturer of automatic packaging machinery.

### JANUARY STEEL OUTPUT EXCEEDS 8,000,000 TONS

1 1 1

Production of steel exceeded 8,000,000 tons a month for the first time in January, according to the American Iron and Steel Institute. The total of ingots and steel for castings was 8,172,236 net tons, which exceeded the entire 1948 output in any other country except Great Britain and Russia.

This new high level was an increase of 401,000 tons over December 1948, and nearly 7.0,000 tons over January 1948. The latter is an unusually large gain compared with previous year-to-year comparisons.

Steelmaking furnaces of the industry were operated at an average of 100.1 per cent of the new record high capacity. It was the third recent month in which operations were at or above 100 per cent, the other two being October and November, 1948.

The January output indicates the ability of the industry to make a lot more steel in 1949 than the total of 88,533,000 tons reported for last year.

(Please turn to page 318)

### SHELDON

TS 56



1114" Swing 1" Collet Capacity. "Zero Precision Taper Roller Bearings.

Unless you have kept up-to-the-minute with post war developments in the new, lighter, moderate-priced lathe field, you will be surprised to discover the tremendous advances that have been made in accuracy, speed, stamina and earning power. Write today for the SHELDON G-48 Catalog—showing, giving complete specifications, test tolerances and available accessories and attachments of SHELDON 10", 11" and 12" Precision Lathes, Sheldon Milling Machines and the Sheldon Shapers.

SHELDON MACHINE CO., INC.

4220 Knox Avenue

Chicago 41, U. S. A.



The DI-ACRO Rod Parter further increases the range of "DIE-LESS DUPLICATING" as a real cost-cutting, time-saving production technique so well established by the DI-ACRO Benders, Brakes and Shears.

Do you require precision? — DI-ACRO Rod Parter holds tolerance to .001' on duplicated cuts. The ends are square, and roundness is maintained.

Do you want speed? — The Rod Parter exceeds output of other methods with equal accuracy, on rods and bars up to  $\S_5$ .

"PARTS OFF" MANY MATERIALS—All hot and cold rolled rods, Stainless Steel, Chrome Molybdenum, Copper, Brass, Aluminum, Bi-metals.

GET "DIE-LESS DUPLICATING" CATALOGI Shows parts produced without die ex-

pense by DI-ACRO Benders, Brakes, Shears, Rod Parters, Notchers, Punches.

Pronounced "Die-ack-re"



305 8th Avenue, Lake City, Minn.

IMMEDIATE
DELIVERY

# STEELS LOCKERS By MEDART

Medart all-steel Lockers are now available for immediate delivery... In sizes and types to fit every industrial need... Medart has been supplying lockers to industry for more than a quarter of a century... Remember! There are other lockers that have some features that were originally developed by Medart...only MEDART LOCKERS have all those features which have earned for Medart the slogan "The Standard of Comparison."

Write for Descriptive Literature and Prices.

### FRED MEDART PRODUCTS, INC.

3545 DEKALB STREET

ST. LOUIS 18, MISSOURI

March, 1949

Want Additional Product Information? See Page 19.

317

# WHITLOCK



### The Utmost In Rope Value

WHITLOCK CORDAGE CO. 46 South Street • New York

### FOR SAFETY PLUS



For better rubberized Work Gloves, look for the HOOD Trade Mark — a sign of quality since 1896. Styles to suit every requirement. Send for folder. Order from your jobber.

~ HOOF) -HOOD RUBBER CO., WATERTOWN, MASS. A Division of the B. F. Goodrich Company

### LIGHT UP Your Machines Keep COSTS DOWN VIMCO



SEND FOR FOLDER NO. 74. Select the standard hi-intensity VIMCOLIGHT machine light to solve your problem. Installs in a lifty. Flexible arm directs light from any angle . . . can be furnished specially oil-proofed for wet operations. Low cost will surprise you. Fully guaranteed. Special engineered machine lighting upon request. Distributorships Available

VIMCO MFG. COMPAN

### NATIONAL INDUSTRIAL CONFERENCE BOARD ECONOMIC ALMANAC FOR 1949

"The Economic Almanac for 1949" is announced by the National Industrial Conference Board, 247 Park Ave., New York, N. Y. Now in its ninth edition, the almanac contains 476 pages of the latest available statistical series and tables on the economic state of the nation. Among the numerous sections of the book are those on Prices, Public and Private Dept., National Income, Resources, Manufacturing, Transportation, Construction, Trade, Statistics of Individual Industries, Agriculture, Labor Force, Organization of Federal Government, and Alphabetical Designation of Governmental and International Agencies.

The price of the edition in cloth is \$5.00; paper, \$4.00; 560 pages; size 53/8"

x 73/1".

### 1949 OUTLOOK FOR INDUSTRIAL ENGINEERING AND BUILDING

The volume of industrial engineering and building during 1949 is extremely difficult to predict because of a number of major "imponderables," Otto F. Sieder, Executive Vice President and General Manager of The H. K. Ferguson Company, Industrial Engineers and Builders, disclosed today in his firm's annual forecast of the industrial engineering and building market.

"We have seldom encountered a situation where construction volume has been based on so many contingencies," Mr. Sieder said. "Under one set of circumstances, 1949 can be another banner year for industrial engineers and builders; on the other hand, total volume in the industry could drop as much as 30 per cent below 1948 volume. The proper answer probably lies somewhere between these two extremes."

Mr. Sieder's summary is based on surveys conducted by Ferguson district offices in Cleveland, New York, Houston, Cincinnati and Los Angeles, and on personal interviews with more than a score of the Nation's leading buyers of industrial engineering and building services.

The first major "imponderable" that is delaying hundreds of millions of dollars worth of new construction is the national

uncertainity on taxes.

"A number of leading manufacturers and chemical processors have told us that they must hold up construction commitments until they know more about their '49 tax bill," Mr. Sieder said. "From their statements, we have arrived at 'an operating rule of thumb' that 'the higher the taxes the lower the building volume this year.'

"The reason", he continued, "is that excessively high corporate taxes will dry up the available capital market. Most corporations simply do not have enough money on hand to build new facilities out

of surplus.

Another of the major variables that will affect construction volume during

(Please turn to page 320)

# A pleasant note for tubular needs

**Like** to add a pleasant note to your present tubular applications—a note of better design, faster production, lower costs or higher quality?

If you would, better sound out Bundyweld\* Tubing!

Made of steel, Monel, or nickel by a patented process, leakproof, vibration-resistant Bundyweld is manufactured to close tolerances always. Strong yet ductile, it bends without collapsing or weakening structurally, and can be machined or fabricated easily and readily.

Tubular parts for toys, refrigeration, radiant heating, television, automobiles, machine tools, ranges . . . these are only a few of the fields that find Bundyweld ideal for their tubular needs.

If you have a tubular design or production problem, chances are that this miracle tubing of industry can strike a responsive chord in its solution. Why not give it a try? Contact your nearest Bundy representative listed below, or write direct to: Bundy Tubing Company, Detroit 14, Michigan.



BUNDYWELD IS TUBING

Bundyweld Tubing, made by a patented process, is entirely different from any other tubing. It starts as a single strip of basic metal, coated with a bonding metal.

2 This strip is continuously rolled twice laterally into tubular form. thickness and concentricity are assured by close-tolerance, cold-rolled strip.

3 Next, a heating process fuses bonding metal to basic metal. Cooled, the double walls have become a strong ductile tube, free from scale, held to close dimensions.

4 Bundyweld comes in standard sizes, up to 5/4" in steel (copper or tin O.D., coated), Monel or nickel. For tubing of other sizes or metals, call or write Bundy

BUNDY TUBING DISTRIBUTORS AND REPRESENTATIVES

Cambridge 42, Mass.: Austin-Hastings Co., Inc., 226 Binney St. • Chattanooga 2, Tenn.: Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg. Chicago 32, III.: Lapham-Hickey Co., 3333 W. 47th Place • Elizabeth, New Jersey: A. B. Murray Co., Inc., Post Office Box 476 • Philadelphia 3, Penn.: Rutan & Co., 404 Architects Bldg. • San Francisco 10, Calif.: Pacific Metals Co., Ltd., 3100 19th St. • Seattle 4, Wash.: Eagle Metals Co., 3628 E. Marginal Way . Toronto 5, Ontario, Canada: Alloy Metal Sales, Ltd., 881 Bay St.

BUNDYWELD NICKEL AND MONEL TUBING IS SOLD BY INTERNATIONAL NICKEL COMPANY DISTRIBUTORS IN PRINCIPAL CITIES.

### Seven new planes completed ...at a cost of \$4.30!



New planes can't fly without control cable, and this manufacturer needed some—fast. He got it the same way he regularly gets many supplies and parts—by Air Express. Ordered in A.M., delivered to plant same day. 500 miles, 28 lbs., Air Express charge only \$4.30. So production continued without a break.



\$4.30 included pick-up and delivery at no extra charge—and receipt for shipment. All this, plus the world's fastest shipping service. That's Air Express—used with profit by every business.



Shipments go on all flights of Scheduled Airlines. Speeds up to 5 miles a minute—no waiting around. Direct service to over 1,000 airport cities, airrail for 22,000 off-airline offices.

### Facts on low Air Express rates:

22 lbs. of new fashions goes 700 miles for \$4.73. 6-lb. carton of new jewelry line goes 1,000 miles for \$2.24. Same day delivery in both cases if you ship early.

Only Air Express gives you all these advantages: Special pickup and delivery at no extra cost. You get a receipt for every shipment and delivery is proved by signature of consignee. One-carrier responsibility. Assured protection, too—valuation coverage up to \$50 without extra charge. Practically no limitation on size or weight. For fast shipping action, phone Air Express Division, Railway Express Agency. And specify "Air Express delivery" on orders.



AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE SCHEDULED AIRLINES OF THE U.S.

(Continued from page 318)

the year, according to the Ferguson survey, is the cost trend. The backing of work that has been built up because of unpredictable costs is measured now in the billions. Although much of this backlog will not be tapped until an actual decline in costs, a sizeable portion of it will go ahead if construction costs can be stabilized.

"We can't expect costs to decline materially in the near future," Mr. Sieder said. "But we do feel that the combined efforts of managements and labor, working in concert, can hold the cost line to the extent that we will be able to estimate accurately the cost of a project."

### DATA AND CONVERSION TABLES OFFERED BY B & W TUBE COMPANY

The Babcock & Wilcox Tube Company now has available the latest editions of five tables which should be useful to engineers or anyone dealing with steel tubing. Included in the material are the following data cards: #115, Tolerances of Round Seamless Steel Mechanical Tubing, giving permissible variations in diameter and wall thickness for colddrawn unannealed and finish-annealed and for hot-finished tubing; #112, Metric Conversion Table, a handy reference which converts millimeters to decimals of an inch; #110, Linear Conversion Table, giving the relation of inches and fractions of inches to decimal parts of a foot; #103, Wall Thickness Data for Seamless and Welded Tubing, showing wire and sheet metal gauge equivalents, in inches and millimeters; and #125, Hardness Conversion Tables, giving the approximate relation between hardness by various testing systems (Rockwell, Vickers, Shore and Brinell) and tensile strength of carbon and alloy steels.

All data cards are available free and should be requested by number from The Babcock & Wilcox Tube Company, Beaver Falls, Pa.

### NEW WALL CHART SHOWS TAP DRILL SIZES

"Tap Drill Sizes", fourth in a series of wall charts announced by the South Bend Lathe Works, 309 Madison Street, South Bend 22, Ind., is now available at 10¢ per copy. It is 13" x 19" with white lettering on a dark blue field. The chart covers American National Screw Thread Pitches as established by the National Screw Thread Commission and approved for general use. Sizes of threads, threads per inch, outside diameter of screw, tap drill sizes, and decimal equivalent of drill are given for National Coarse Standard Threads (N.C.), formerly U.S.S.; National Fine Standard Threads (N.F.), formerly S.A.E.; and Special Threads (N.S.).

Other charts are "Principal Parts of A Lathe", "How to become a Machinist", and "Decimal Equivalents"—each 10¢.

(Please turn to page 322)

# 9ti HARPER EVERLASTING

12 TO OVER COMMON STEEL

- 1. Resistance to Rust and Corrosion
- 2. Resistance to High Temperatures
  - 3. Non-Magnetic
  - 4. Non-Sparking
- 5. Re-Usable
- 6. Attractive
  Appearance
- 7. Easy to Clean
- 8. High Strength
- 9. Long Life
- 10. Lower Ultimate
- 11. Resistance to Fatigue
- 12. Easy to Plate or Finish

Common Steel - Lower First Cost



—An amazing combination of advantages in favor of nonferrous and stainless steel bolt and nut products—advantages which make your product stand up and perform better under adverse conditions—advantages in greater service, disassembly or adjustment—and all at a cost only slightly more than common steel.

### 6000 INDIVIDUAL ITEMS IN STOCK

The widest assortment of bolts, nuts, screws, washers, rivets, and accessories in Brass, Bronzes, Copper, Monel and Stainless Steels available from one source...large quantities of each. Specials made to order from ample stocks of raw materials.

WRITE TO GENERAL OFFICES, DEPT. F, FOR OUR 134 PAGE COLOR CATALOG giving blue print drawings, dimensions, threads, heads and sizes of each item. Special Stainless Steel Catalog also available upon request.

### THE H. M. HARPER COMPANY

General Offices and Plant MORTON GROVE, ILLINOIS (Suburb of Chicago)

New York Office and Warehouse NEW YORK 13, 200 HUDSON STREET

Branch Offices—Allanta, Cambridge, Cincinnati, Cleveland, Dallas, Denver, Detroit, Grand Rapids, Los Angeles, Milwaukee, Philadelphia, Pittsburgh, St. Louis, San Francisco, Seattle, Toronto (Canada).



Perhaps you've thought of Fuller for brooms or mops. But remember, there's a Fuller cleaning tool especially designed to meet every cleaning requirement. Whether it's for sweeping or dusting — for mopping or polishing — you can get everything you need from this one source of supply. It will pay you to investigate the complete Fuller line of industrial cleaning equipment.





INDUSTRIAL DIVISION
3554 MAIN ST., HARTFORD 2, CONN.

IN CANADA: FULLER BRUSH COMPANY, LTD., HAMILTON, ONTARIO

### HOT ROLLED STEEL BARS COMMERCIAL STANDARD

Commercial Standard CS 150-48, Hot-Rolled Rail Steel Bars, (produced from Tee-Section Rails) effective for new production as of October 20, 1948, is now available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D.C., at 10¢ per copy.

### SCALE WEIGHT PRINTER PRINTS ACTUAL SCALE WEIGHTS

A new type of weight printer announced by The Yale & Towne Mfg. Co. Philadelphia Division, Philadelphia, Pa., offered as an integral part of Yale Load King industrial scales, eliminates the uncertainty of the lead pencil and the human element by printing actual weights in numerals 9/32" high, without additional



printing or mental calculation. The various weights in a series can be identified by printing opposite the recorded weight from one to eight symbols, numerals or letters, making more accurate data available for inventory control, shipping records, production records, and so on. It can be adjusted to take tickets from 3" x 5" up to 8½" x 11" with one to four copies. All copies including the original are carbon backed and of regular weight. Other combinations are available. The standard printer operates on 100-volt, 60-cycle, single-phase, a-c current. It can be furnished for operation on other currents on request.

### INTERNATIONAL LIGHTING EXPOSITION TO BE HELD IN CHICAGO

Replete with many new features not found at previous expositions, the Third International Lighting Exposition and Conference sponsored by Industrial and Commercial Lighting Equipment of the National Electrical Manufacturers Association, will be held at the Stevens Hotel, Chicago, Ill., March 29 through April 1.

Nearly 100 exhibitors will display and demonstrate all the newest developments in industrial and commercial lighting equipment. Among these are the new luminous louvered ceiling and troffer lighting, new ideas in fluorescent lamps and the sockets and fixtures for installing them, as well as many other new lighting devices and equipment never before exhibited.

(Please turn to page 324)

# Stainless Steel Pipe Lines

Right Obb the Shelf!

Whether you use it to handle chemicals . . . foodstuffs . . . or dairy products . . . you'll find everything you need for that stainless pipe line right in Frasse warehouse stock.

Stainless pipe? Frasse stocks it in seamless or welded, standard or extra heavy—and in a complete range of sizes. You can choose the analysis, too—type 304, type 316 for severe corrosive conditions, or type 347 for high temperature use. All are on hand for immediate delivery.

Valves and fittings are equally handy. Frasse stocks stainless gate and globe valves, nipples, elbows, couplings, tees, unions—everything you need to hook up a new line, or replace a section.

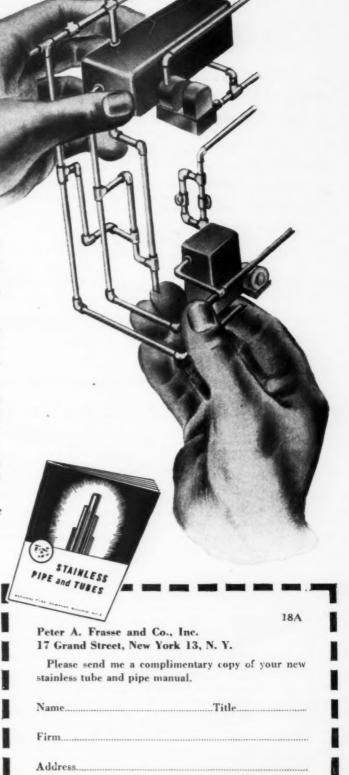
It's convenient to work with the range and variety in Frasse stocks—and the quick delivery helps you get the job done. Whenever the layout calls for stainless—call Frasse. Peter A. Frasse and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200) · 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Baldwin 9-9900) · 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) · Jersey City · Syracuse · Hartford · Rochester · Baltimore

### NEW! For Stainless Pipe and Tube Users!

This new 24-page manual is brimful of useful data on stainless steel tubular products. Includes type characteristics, physical properties, fabricating data, tolerances, standard finishes, corrosion resistance, and similar essential information. Invaluable for reference if you're working with stainless tube or pipe. Send for your free copy today.

FRASSE ... for

Stainless Tubing, Pipe, Valves and Fittings



### before you pick a lock nut...

If you haven't given An-cor-lox a trial, DO IT, before you pick a nut that has fewer advantages. An-cor-lox nuts are VERSATILE... They can be used where other lock nuts are impractical. For example:



- Locking device on the bottom permits a short stud.
- Cap nuts, thin nuts and spanner nuts are all available.
- Wide choice of materials and finishes for resistance to corrosion, heat and severe atmospheric conditions.
- The locking device fits snugly against the work, forming a pressure seal.

DON'T select your lock nut until you've tested An-cor-lox. Write to us today for descriptive material and free standard samples to fit your application.

An-cor-lox

Lock Nuts

LAMINATED SHIM COMPANY, Inc. An-cor-lox Division,

An-cor-lox Division, 2403 Union Street Glenbrook, Conn.

AN-COR-LOX NUTS . SHIMS . SHIM STOCK . STAMPINGS

# in flexible INSULATED LEADS

\*Products covered by patents patents pending Copyright 1949 Aircraft-Marine Products Inc.

AMP PLASTIC INSULATION\*

Combining the low production cost of AMP automatically applied terminals, with a special flexible plastic insulation application developed by AMP, plug-in leads and similar components are now being produced which feature precision positioning of the

SUPERIOR TO "RUBBER" MATERIALS

jack-pin in the molded insulation.

Higher dielectric properties than

- "rubber" (300 volts per mil)

  Has "live" flexibility; does not crack on severe bending
- Molded to hardness range Durometer "A" 60-90
- Holds a snug fit around wire insulation even on flexing
- sulation even on flexing

  Not affected by oil, grease,
- age, or sunlight

  Practically irremovable from the wire and can be physically

bonded to the metal where required

- Does not deform delicate parts
   Inserts, pins, etc. hold precise position in this insulating material
- Available in complete range of opaque colors for coding and matching other color schemes
- Low shrinkage; holds to close tolerances
- Withstands temperatures to 170° F
- Molds well in intricate designs

Plug-in leads and similar parts can be produced by AMP to your specifications, using AMP automatic wire terminations for the electrical connection with the special AMP applied insulation—or, we will apply this plastic insulation to leads which you supply.

this plastic insulation to leads which you supply.

Do not hesitate to send drawlings, parts, or sketches for appraisal and recommendation by the AMP Engineering Department.

### AMP AIRCRAFT-MARINE PRODUCTS INC. 1319 North 4th Street, Harrisburgh, Pa.

Sole Canadian Representative: F. Manley & Sons, Ltd., Toronto, Ont., Canada (Continued from page 322)

A high spot of the Conference sessions will be lecture-demonstrations, among them "What the Lighting of the Future Will Mean to You", conducted by Alston Rodgers of the General Electric Co.; "Glass Comes of Age", by Harold G. Vogt of Corning Glass Works; and "Plastics, the New Look in Lighting", by F. W. Tetzlaff of the Rohm & Haas Company.

A 36-page booklet containing the complete program is available from B. F. Stevens, public relations counsel, Van Auken, Ragland & Stevens, 326 W. Madison Street, Chicago, Ill.

ARMY ESTABLISHES CENTRAL OFFICE FOR INFORMATION ON SUPPLY NEEDS

A Procurement Information Center has been established in the Office of The Assistant Secretary of the Army to supply information concerning Army procurement of supplies and equipment, it was announced recently. Lieutenant Colonel Edgar M. Teeter, of Oil City, Pennsylvania, the officer-in-charge, has opened the office in Room 4E789 of The Pentagon, Washington, D. C.

Information concerning current Army procurement programs, submission of bids, buying and purchasing offices, and abstracts of bids will be made available at the Procurement Information Center.

Prospective bidders and manufacturers interested in securing information may write directly to the Center, make telephone inquiries or call in person at the office. The telephone number of the Procurement Information Center is REpublic 6700, extension 4327. Letters should be addressed to the Procurement Information Center, Office of The Assistant Secretary of the Army, Room 4E789, National Defense Building (The Pentagon), Washington 25, D. C.

The establishment of this information center was the result of the growing need for one place in the Department of the Army where members of legislative bodies, other government agencies and business, both large and small, can go to obtain information concerned with the procurement activities of the Army.

CONSUMPTION OF NEW RUBBER EXCEEDS 1,000,000 TONS PER YEAR

For the third successive year United States consumption of new rubber exceeded 1,000,000 long tons, with estimated 1948 consumption put at 1,073,250 tons, according to report of the Rubber Manufacturers Association. Use of synthetic rubber declined in 1948 to 449,801 long tons. The bulk of the reduction in use of synthetic rubber is accounted for by drop in use of GR-3, the general purpose rubber. Reclaimed rubber consumption for 1948 is estimated at 272,231 tons reflecting a decrease against 1947 of more than 12,000 tons.

(Please turn to page 326)

at this hacksawing record!

PERFORMANCE of a single "JET-EDGE" Blade

# MONDAY

40 pieces 31/4" Nitroloy

# TUESDAY

50 pieces 1" x 5" Cold Rolled Steel

# WEDNESDAY

40 pieces  $4\frac{1}{2}$ " 50 Carbon Chrome Moly Steel

# THURSDAY

10 pieces 4½" 50 Carbon Chrome Moly Steel 12 pieces 6" Standard Steel Pipe 30 pieces ¾" x 5" SAE 1020

# FRIDAY

4 pieces 63/4" Rytense

# SEE what "Jet-Edge" can do for you.

In metal cutting, records like this mean money saved. "Jet-Edge," that rugged, unbreakable new blade with a super high speed edge welded to an extra strong back, will out-perform the best blade you've ever used. It will actually save you 20% to 50% on your power hacksawing costs, even under toughest cutting conditions.

# WRITE for a free demonstration.

Find out why and how. We'll be glad to arrange a demonstration on your own work. No obligation — except an open mind for one of the most astounding performances you have ever seen.

MILLERS FALLS COMPANY, Dept. M Greenfield, Massachusetts



It's "Jet-Edge"!

It's Millers Falls!

Can You Name it?\*



# Another name might be the PRODUCTION CASTING OF THE MONTH

SUPERIOR FOUNDRY OF CLEVELAND, OHIO

will show you monthly an outstanding example of production castings...

that our modern and completely staffed and equipped Foundry turns out regularly for satisfied customers. They know that it saves them time, money, and production headaches to always bring their casting problems to

SUPERIOR FOUNDRY, INC.
3542 EAST 71st STREET • CLEVELAND 5, OHIO

MICHIGAN 3078

\*11's a 5 cylinder crankcase, designed for refrigeration compression. Such an intricately cored casting must be able to withstand the high pressure of volatile gases and must still lend itself to easy machinability.

# PLASTIC LINING FOR DRUMS AND TANKS

Cycloflex PC-11 plastic lining, chemically inert membrane developed specifically for the production of drums and tanks, is announced by the Poly-Cycle Products Co., Cleveland, Ohio. Cycloflex is described as a sturdy and tough coating that provides top resistance to corrosion and chemical attack, repelling inorganic acids, alkalis, aliphatic hydrocarbons, water, oxidants, grease, and even the higher oxidizing reagents such as nitric and chromic acids.



The linings have smooth high-glass finish.

The white lining is said to be non-contaminating so far as plating solutions are concerned, including rhodium, gold, etc. Drums and tanks lined with Cycloflex white have a smooth highgloss finish. The coating is also available in high-gloss black. The company states that the linings will withstand high fluctuations in temperature and will not break, crack, chip or peel at high temperatures.

# ADJUSTABLE HAND PUNCH



The base of this adjustable hand punch made by The Punch-All Co., Inc., 46 Hinckley Road, Waban, Mass., is made of Tenite, cellulose acetate butyrate plastic, and the metal punching members and punch bar are set in such a way that no metal part can come in contact with the desk. The unit will punch 1/4' holes in up to 10 sheets of 16-lb. bond paper. It can be adjusted to any 2- or 3-hole spacing on any size sheet, and is available in all spacings from 2 to 7 holes. Positioning calibrations are molded into the front of the base. The Punch-All is 103/4" long, 21/8" wide, and weighs 71/2 ounces.

(Please turn to page 328)



# with the help of Sponger sponge rubber!

Even for small fry the modern refrigerator has varied and wonderful uses. And even in their lives *Spongex* sponge rubber is playing an increasingly important part to make the way pleasanter, smoother, quieter and easier.

Spongex today is used in an almost infinite number of products, ranging from refrigerator door seals to shoe insoles—from all kinds of seals and gaskets, motor suspension pads, seat cushions and backs, to weatherstripping, radio rubber parts and toys.

All the cushioning, sound deadening, sealing and insulating properties of rubber have been multiplied in *Spongex* and precisely engineered to do a specific job. And *Spongex* does a *better* job because it's made by a company that for 25 years has concentrated on making rubber do a better job of cushioning, insulating, sealing.

See the difference, feel the difference, prove the difference such experience makes. Send now for generous samples of *Spongex* to test for resiliency, cell structure, tensile strength and resistance to temperature extremes, moisture, acids, corrosive vapors, abrasion and aging. Write today, naming your product and problem. Sponge Rubber Products Co., 132 Derby Place, Shelton, Conn. Sales offices in principal industrial centers.



Trade Marks Reg. U. S. Pat. Off.

SPONGE RUBBER PRODUCTS CO.

SPONGEX . CELL-TITE . TEXFOAM . TEXLITE . TEXLOCK

# For -✓ Top qualit rivets **√** Service you'll like

It's a difficult thing to put into words . . . but easy to prove. Next time you need tubular or split rivets, "buy American," as so many leading manufacturers do. See if you don't find us the kind of source you like - ready, willing and able to supply exactly what you want, when you want it.



**Tubular and Split Rivets** . . . of all metals . . . for all industrial applications.



1313' W. Congress St., Chicago 7, III.

## A.S.A. SPECIFICATION FOR SHEETS AND PILLOWCASES

Buying organizations and retailers can now be assured that the sheets and pillowcases they order will meet minimum standards of quality. National standards to be known as American Standard Specifications for Bleached Cotton Bed Sheets and Pillowcases have just been made available following approval by a majority of manufacturer, retailer, and consumer interest groups under the procedures of the American Standards Association, and have been developed under the sponsorship of the American Hospital Association. To be sure that they receive sheets that meet these minimum standards of quality, buyers can specify on their purchase orders that sheets and pillowcases shall meet or exceed the American Standards for the various types. They can get this information through to their customers by asking manufacturers to attach specification labels to the sheets and pillowcases.

These standards define important quality factor for five types of sheets. They establish minimum breaking strengths for both warp and filling, indicating relative strength and durability of the fabrics; the maximum percent of sizing which may be added to the fabrics of the different types; the weight by ounces per square yard, indicating the relative amount of cotton in the fabrics; the number of stitches per inch in the seams and hems. Methods of test and tolerances also are defined. The five types are named according to the combined thread count of warp and filling and the kind of varn used.

The American Standard Specifications for Bleached Cotton Bed Sheets and Pillowcases, L4. 1-1948, can be obtained from the American Standards Association, 70 East 45 Street, New York 17, New York, for 25 cents per copy.

## NEW CENTRIFUGAL FAN STATIC EFFICIENCY 80%

New design centrifugal fan of its Silentvane type, is announced by the Sturtevant Division of the Westinghouse Electric Corporation, Hyde Park, Mass. The new fan, it is said, reaches a static efficiency of 80%-believed to be the first time for a centrifugal fan. The previous model had a rating of 78%. Harold F. Hagen, Sturtevant's director of research, states that for large users of such fans, the increased efficiency can cut many thousands of dollars from power bills. This saving could easily amount to more than 20% of the fan's cost within a fiveyear period, he explained. The new Silentvane, called the Design 10, will be available in 23 sizes, with wheels ranging from one to nine feet in diameter. Installed in its housing the largest model will stand nearly 18 feet high. It will be capable of moving 480,000 cubic feet of air a minute, or 1000 tons of air every

The Silentvane type fan is used widely for air conditioning, industrial ventilating systems and in power plants.





# Attention PURCHASING AGENTS

Consult INSULATION (as many manufacturers are doing) for study and comment on your custom-molded housing , , , for production in quantity for your branch of industry! Send prints for prompt quotes!



# A NEW HIGHER PRESSURE 0-B GATE VALVE featuring the FLEXITITE\* DISC





A big, husky gate valve has been added to the Ohio Brass line to handle higher pressure general services. This new valve is rated for 200 lb. W.S.P. and 400 lb. W.O.G. pressures, and is fully guaranteed for services at these pressures.

This valve, like all O-B Gate Valves, features the unique Flexitite\* Disc that always gives a tight shutoff. This disc combines solid wedge strength with sufficient flexibility to adjust disc faces to a perfect, all-around tight seal with the seat.

On your next order for high-pressure gate valves, specify O-B and see for yourself how much longer the service life of the valve is with a Flexitite\* Disc.

\* Reg. U. S. Patent Office.

OHIO BRASS COMPANY, MANSFIELD, OHIO

2998-V

Okio Brass
FOR DOMESTIC AND

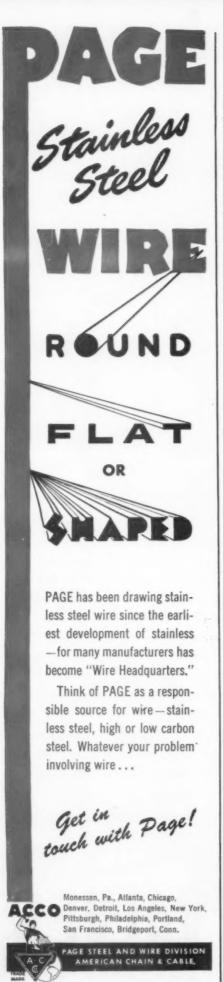
VALVES

INDUSTRIAL USE

MARCH, 1949

Want Additional Product Information? See Page 19.

329



# CHINA CIVIL WAR INFLUENCES PAINTING MAINTENANCE COSTS

Today, far away events have a habit of affecting American institutions and industrial concerns in ways hard to predict according to the Paint and Varnish Brush Division of the American Brush Manufacturers Association, Philadelphia. The China Civil War, for example, may cause painting maintenance costs to rise unless the same kind of conservation practiced during the war is again applied to brushes. 80% of the raw material used in the filament construction of the best brushes comes from China. And it is to North China that the brush industry looks for the longest and softest bristles. Since the fall of Mukden and Communist domination of that area, the production of these finest bristles has come to almost a halt.

Although it is still possible to obtain South China bristles in fair quantity, these are both stiffer than Northern bristles and tend to be shorter in length. With them it is possible to manufacture long paint brushes that hold large quantities of paint and spread it over wide areas. These are the brushes that enable our painters to get, by far, the highest hourly wages in the world and still produce painted surfaces at lower costs. That this high level of productivity be continued is of vital concern to every individual charged with the maintenance of institutional and plant properties.

Improvement of present synthetic substitutes for the hard-to-get long bristle will undoubtedly be hastened by the present acute situation, but there is reason to believe painters face the probability of working in the near future with a brush similar to that produced in wartime. This, it may be remembered, was a brush composed of a true bristle content not exceeding 55% with remaining filaments of horsehair. In this connection, maintenance buyers should carefully note branding and labeling of all brushes they buy. Top manufacturers will continue their high standards as long as possible and when substitutes or adulterants become necessary, such will be indicated on the product. When horsehair fibres or other adulterants are used, their presence will be clearly stated on the handle.

Until the resumption of bristle production on a good scale in North China, painters and users of paint brushes are urged to examine and maintain their present stocks. Almost every paint shop has brushes which by careful washing and reconditioning can be used for many more paint jobs. Maintenance painters can frequently employ brushes made of shorter bristle which is still available. Many craftsman prefer a medium length pure bristle to a long stock adulterated brush.

A considerable effort by the painting industry toward conservation, will do much to alleviate the present situation. This is earnestly recommended by the paint and varnish brush manufacturing industry.

(Please turn to page 332)





Test your Brush I.Q.

No. 2 in a Series



# PITTSBURGH— Produces the Most Complete Brush Line in the Industry!

**Painting**... Purchasing agents from coast to coast depend on Pittsburgh's complete line of brushes for every use. It's a reliable source for Gold Stripe, Neoceta, and Nylon. And in these days of rising costs, you'll welcome the Pittsburgh Neoceta brush as a *real* economy in painting tools.

**Maintenance**... When it comes to sweeps, dusters and scrubs—there's none better than Pittsburgh's "Lightning Line".

Industrial . . . Pittsburgh maintains a crew of skilled engineers to quickly and effectively solve your power-driven brush problems. You'll find their assistance valuable in developing any type of power-driven brush to your particular specifications. Write or call Pittsburgh Plate Glass Company, Brush Division, Baltimore 29, Maryland.

# What determines the bristle's resilience?

The bristle's resilience or elasticity is due to its taper, for bristle is thicker at the root end than at the flag. This natural taper gives the bristles springiness, as demonstrated on a larger scale in a fisherman's fly rod.

This springiness, or elasticity, is necessary in a good painting tool. Pittsburgh combines various lengths and kinds of bristle to give the ideal elasticity for each length and type of brush.



One Source—One Quality—One Name to Remember—PITTSBURGH!



BRUSHES FOR INDUSTRY

BRUSHES . PAINT . GLASS . CHEMICALS . PLASTICS

PITTSBURGH PLATE GLASS COMPANY

# DO YOU TIME YOUR CUT-OFF OPERATIONS ... IN HOURS ... OR MINUTES ... OR SECONDS ?

If it's a matter of hours . . . or even minutes . . . here's the practical way to cut it to seconds . . . and to cut costs at the same time!



# THE METHOD

Abrasive Cutting! Regardless of the material you cut . . . or whether the operation is in the toolroom, stockroom or on the production line . . . the abrasive method means cutting time is actually measured in seconds . . . means you cut to size within a few thousandths . . . means a finished surface that generally requires no further machining. Important facts that add up to just one thing . . . reduced costs!

# THE WHEEL

In our long experience as specialists in abrasive cutting, we have developed a wide range of wheels (Rubber Bonded and Resinoid Bonded) in a scale of sizes and properties, each with specific characteristics. Selecting the right wheel best suited to meet the requirements of your job is an important part of our business.

Investigation costs nothing . . . and it may pay you well

to investigate. Give us full particulars of your cutting operation . . . we will gladly make recommendations that will assure better results, at lower costs.





#### FREE ON REQUEST

Here are the complete facts on Abrasive Cutting and Allison Wheels . . . yours for the asking. Send for your copies today.

THE ALLISON COMPANY 259 Island Brook Ave., Bridgoport, Cons.

## DO YOU CUT

STEEL
BRASS
NICKEL
ALUMINUM
GLASS
PLASTICS
TUBING
TUNGSTEN

Allison

BRASIVE UTTING EXPERT

#### SYNTHETIC ADHESIVES

#### By W. T. Cruse, Executive Vice President Society of the Plastics Industry

Synthetic adhesives made their debut about 1928. While much had been done prior to this time in the chemistry of these materials, it was not until this period that they came to be used commercially. There is an inexorable axiom that "Necessity is the mother of invention." It was the need for adhesives which would withstand outdoor exposure and tropical and sub-tropical environment that led to the development of adhesives that would withstand these conditions.

The types of resinous adhesives which are now extensively used are phenolic, urea, Melamine and Resorcin resins.

#### Phenolic

These resin adhesives are used principally for making assemblies in wood, plywood, laminated wood, phenolfiber laminates and phenol paper laminates. They have a curing range from 24 hours at 90°F to 2 hours at 160°F. The allowable assembly time is comparatively long—½ to 2 hours. Water resistance is maximum and bond strength is comparatively unaffected by boiling water as well as cold water. These resins are not affected by temperatures that do not destroy wood; in fact, they retard the burning of wood. Chemical resistance is also greater than wood and they are resistant to attack by micro-organisms, such as mold and fungi.

This class of adhesive is the one which initially made plywood suitable for out-

door use.

#### Urea

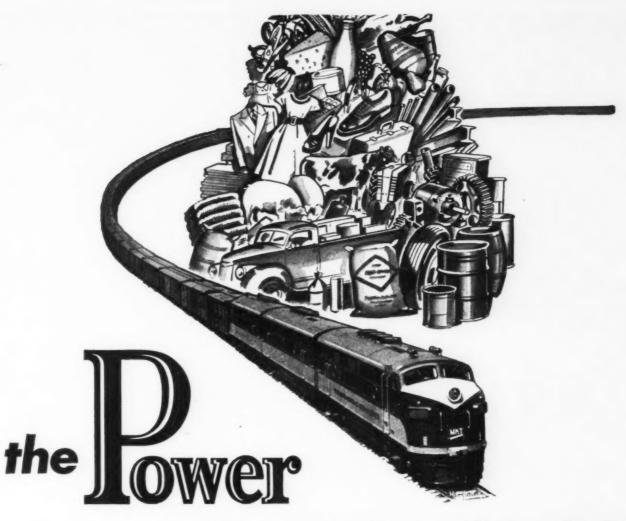
Urea resin adhesives are used largely for making assemblies in wood and plywood, although their use in gluing paper and fabrics to each other and to wood is growing. They have a setting range from 4 to 8 hours at 70°F to 75°F, 1 to 2 hours at 120°F and 10 to 20 minutes at 160°F. The allowable assembly time is 15 to 20 minutes. They have fair water resistance as they withstand fairly long exposure to cold water, but are not resistant to water at elevated temperatures or suitable for continuous immersion. They will not meet the more rigid specifications on water resistance. Heat resistance is good up to 150°F; and chemical resistance is better than wood. They are resistant to attack by mold and fungi.

#### Melamine

Melamine resins have been developed for use under general assembly gluing conditions to be set at temperatures not below 110°F. In general handling properties, the melamine resins approach the ureas. They provide, however, a superior resistance to exposure and such testing procedures as boiling water immersion.

They are used principally for wood, plywood and laminated wood assembly gluing. Some of the more promising so-called gap filling adhesives come from this class.

The resorcin resin adhesives are a relatively new development but accumulated (Please turn to page 334)



# to move Mountains of Freight



#### NEW MERCHANDISE CARS

...hundreds of them, augment Katy's fleet of heavy cargo transportation.



#### NEW HOPPER CARS

... available for quick, efficient, versatile service to shippers.



## NEW DIESEL POWER

...to expedite transfer of your freight at major terminals and road haul it with speed and economy.

# YOURS ON THE KATY

SMOOTH DIESEL POWER... to deliver your goods in perfect condition. High-speed power that permits scheduling to suit your every shipping need.

DIESEL POWERED SWITCHERS... at important terminals to expedite the transfer of your carloads to markets and factories.

RADIO POWER... a magic service PLUS to speed handling of your freight.

Katy's equipped for even heavier, longer hauls, smoother handling of your shipments—dependable, on-time service between Texas and Oklahoma and the North. For careful, precision shipping to and from the Southwest...ship KATY!

MISSOURI-KANSAS-TEXAS LINES

# Ship Via The Southwest's Main Supply Line

KATY BULLET

## KATY KOMET

KATY KLIPPER

Daily from Kansas City and St. Louis to all main Southwestern points.

Katy's fastest—Southbound daily from St. Louis to all main-line points. Daily, St. Louis and Kansas City to Oklahoma and Texas,

#### KATY PACKER

Northbound daily, Fort Worth to Kansas City and St. Louis,

#### "72" FAST FREIGHT

Daily from Texas and Oklahoma to Kansas City and St. Louis-

Also... Convenient Double Daily Service between St. Louis and Kansas City.





# JOE RAMSETTER!

If you don't know JOE RAMSETTER, you're missing a profitmaker. Joe carries the sharpest pencil you ever saw, for cutting costs and saving time on fastening jobs in steel, concrete, brick, other hard materials. It's the RAMSET FASTENING SYSTEM.

No chipping! No drilling! No plugging! Not for Joe! In 30 seconds, he prepares the tool, then places it against the work, taps it—and RAM! It instantly sets pins and threaded studs up to 6'' long and  $\frac{5}{8}''$  diameter. It's fast, it's tight, it's as economical as reading a newspaper over a neighbor's shoulder.

Five pounds of RAMSET TOOL do the trick. Self-contained, completely portable. Easy to use. In 30 minutes, we teach any good, careful workman to RAMSET up to 50 fastenings per hour.

RAMSET SYSTEM saves so much time and money you won't believe it until you see it. Better send for Joe to demonstrate

Ramset

on your own jobs. Just mail the coupon.

Stemco Corporation, Cleveland 16 (Rocky River), Ohio.

Stemco Corporation, Cleveland 16 (Rocky River), Ohio	MAIL THIS COUPON
Please have Joe Ramsetter show us how to save time and costs on fastening jobs.	
Name	
Company	
Address	

test data over the last four years indicates that when properly cured at room temperature, they are fully as durable as the phenolic resins when hot pressed. These adhesives may be cured in from 8 to 10 hours at 70°F to as little as 4 to 7 minutes at 180°F.

One of the most outstanding characteristics of the resorcin resins is their completely neutral formulation which avoids all damage to the celluosic fibers. Another valuable property of the resorcin adhesives is their long storage life inasmuch as they are not reactive until the hardener is added.

Combinations of certain of these resins have given desirable results. Melamineurea resin is practical because of its economy and efficiency.

Resorcinal is a relatively costly rawmaterial. When used n combination with phenol, it is more economical and the major desirable properties of the straight resorcin resin have been preserved.

Promising development is progressing in the use of Furfurol, synthetic protein, emulsion polymers, elastomers, polyesters and thermoplastic polymer fields.

## FUEL OILS COMMERCIAL STANDARD

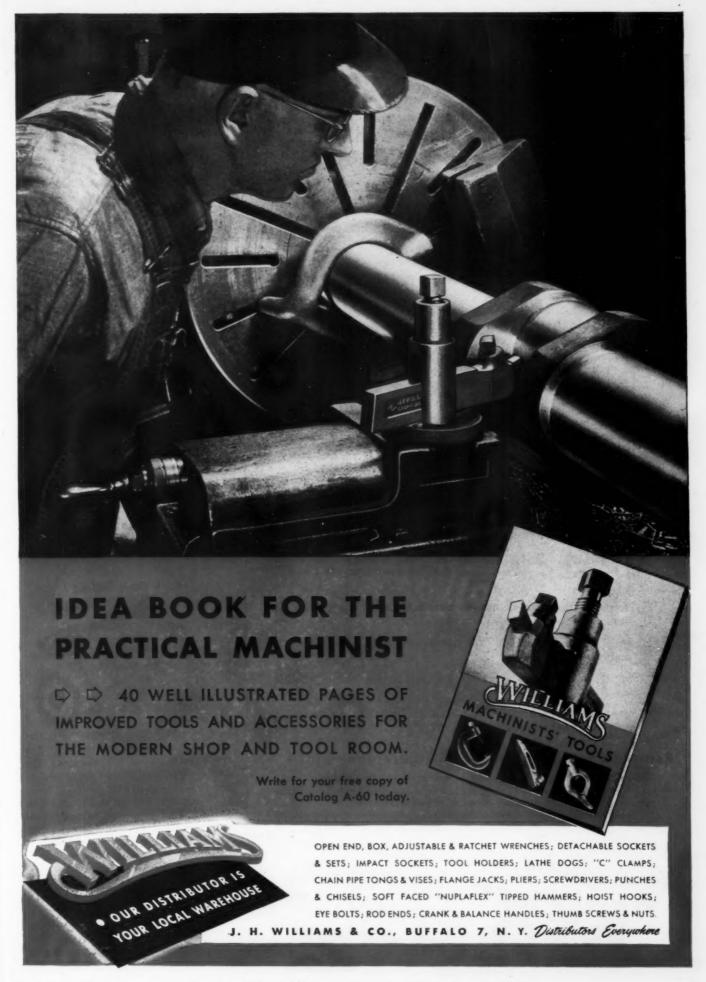
Commercial Standard CS12-48, Fuel Oils, (superseding CS-12-40) is now available in printed form from the Superintendent of Documents, U. S. Government Printing Office, Washington 25 D. C., at 10¢ per copy. The specifications cover five grades of fuel oil for various types of fuel-oil-burning equipment.

# ANNOUNCE PLASTICS TESTING AND RESEARCH LABORATORY

The United States Testing Co., Hoboken, N. J., recently announced the opening of what is said to be the first completely equipped plastics laboratory for independent testing and research development. The project consists of specially designed air-conditioned rooms, 50-ton compression molding presses, a 150,000 volt machine for dielectric strength tests, low temperature cabinets capable of conditioning plastics as low as minus 100 deg. F., and modern testing facilities. The Testing Company plans also to include in its program of activities a "Certification of Quality" plan on products use and performance.

## CUTTING COAL AND ASH HANDLING COSTS

"How to cut small boiler-plant costs by Mechanical Coal and Ash Handling". is title of 16-page reprint booklet just released by Bituminous Coal Research, Inc., 912 Oliver Building, Pittsburgh 22, Pa. It is pointed out that nowhere can modern methods bring greater benefits than in small boiler plants, and that even for the smallest plants there is mechanical equipment to handle coal and ash cheaply. The price of the booklet is 40¢.





# are made for a specific job...



and that job is Wiping!

This is why KEX INDUSTRIAL TOWELS are uniformly:

Soft... woven from thirsty cotton with no harsh surfaces to mar delicate machinery or finished products.

- Bound at the edges, so that there are no loose or ragged ends to get caught in moving machinery.
- Made a convenient, uniform size so that every square inch is usable.
- Super-absorbent and scientifically cleansed to reduce possible infection.
- Actually precision items, produced precisely for one purpose only-your important wiping jobs.

# Rent KEX wiping towels and figure your profits!

There's nothing to buy, no expensive inventory—just a low monthly rental. KEX TOWELS are delivered in neat, easily stored bundles, regularly in quantities as desired. This helps you control distribution.

For complete information see your classified telephone directory for nearest KEX Distributor, or write KEX NATIONAL SERVICE, 295 Fifth Avenue, New York 16, N. Y.



# What the N.A.P.A. Means to Me

(Continued from page 89)

appreciate the tremendous industrial empire behind our American system of free enterprise.

The National Association of Purchasing Agents fosters and encourages the formation of groups composed of purchasing agents for the study and discussion of problems innate to the industry in which they are employed. One of these, the Oil Company Buyers Group, of which I am a member, has been of incalculable benefit to me as an oil country buyer. Through this group I have met and exchanged ideas with men from all sections of the country.

Finally, the N.A.P.A. functions in a thoroughly democratic manner. There is no governing or ruling class as such. The local associations are the origin of its strength and the circulating media through which flows the richly laden stream of information that goes to and comes from our national organization. Through my membership I have the satisfaction of knowing that I am an integral part of a great business organization of alert business men who are constantly looking for methods of self-improvement.

Nowhere can I, as a purchasing agent, get so much for so little.

# Back Door Selling

(Continued from page 143)

selling is for the salesman to get his story to the right man. The negotiation and price control should remain in the hands of the purchasing agent.

A salesman has a new ball bearing. Engineering techniques are involved. The chief engineer should hear his story, and in some cases the cost is an important factor. In most cases, after he has told his story, the price quotation should be made to the purchasing agent.

When salesmen gave literature to you on their products do not throw such material in the waste basket. Pass them on to the men who might use such products. Let them destroy it after they have read it. The message is the important fact involved. Too many purchasing agents throw the material away without passing it on. Picture it as the sales material of your company; you as a purchasing agent spent good money buying

(Please turn to page 338)

# It's CRANE for <u>complete</u> <u>selection</u> for any power piping

For steam, water, oil or gas lines—in short, for any fluid or working condition, there's no more reliable source than Crane for quality piping equipment. One catalog gives you quick and easy selection from the world's most complete line of valves, fittings, pipe and accessories. One order results in fast, modern service from local, well-stocked Crane Branches and Wholesalers.

This Desuperheater and Oil Cooler piping, for example, typifies the unequaled selection you get from Crane. To depend on this Single Source of Supply for every item is to simplify all piping procedures, from design to erection to maintenance. One Responsibility for materials gives you better installations, avoids delays on the job. One Standard of Quality—when it's Crane Quality—helps you to realize the utmost in dependable performance from every part of every piping system.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. Branches and Wholesalers Serving All Industrial Areas

RESPONSIBILITY ANDARD OF QUALITY PIPE

SOURCE OF SUPPLY

IN STEEL VALVES, Crane offers a complete line... gates, globes, angles, checks... in all patterns and sizes... in pressure classes from 150 to 1500 pounds. Shown bere, Crane No. 33 X 300-pound Cast Steel Wedge Gate, trimmed to bandle temperatures up to 900 deg. F. Flanged, screwed or welding ends. See your Crane Catalog, p. 304.

EVERYTHING FROM . . .

VALVES • FITTINGS
PIPE • PLUMBING
AND HEATING

CRANE

FOR EVERY PIPING SYSTEM



When a Watchman is supervised by a DETEX GUARDSMAN Watchclock system there is never a doubt about his whereabouts every minute of his tour. Yes, even on long week-ends and extended plant

Because the GUARDSMAN is like a mechanical conscience which prods the Watchman when he is tempted to sleep, shirk or skip rounds.

Do you know that a DETEX system entitles you to a substantial reduction in your insurance premiums? Write for all the FACTS.



DETEX WATCHCLOCK CORPORATION ECO

Dept. P-3

NEWMAN

76 VARICE STREET, NEW YORK 13, N.Y.

GUARDSMAN Sales and Service in All Principal Cities

# Back Door Selling

(Continued from page 336)

it, your sales department spent time on its preparation and your advertising department spent many hours developing it. Let it tell its story to the man who uses it.

The purchase of printing for advertising purposes presents a difficult buying problem. It is my belief that the sales and the advertising department should pass upon the material and price in combination, for cheap printed material may be poor advertising and result in poor results from a sales standpoint. Remember we are fundamentally in business to sell and serve, and advertising material is sales material. A wise and understanding policy on advertising printing should be agreed to by management, and then the sales manager and the purchasing agent should in agreement execute the purchase.

#### The Seller's Profit

Should we believe in a policy that we want to do business only with a company that operates at a profit? To what degree are destructive buying policies destructive of all business and profits?

High pressure buying policies in a buyer's market may start a downward spiral on purchases which will result in less business, unethical buying, and lower profits. When sales and profits drop, the purchasing agent as well as the salesman will suffer. It is this practice of pressure buying that brings about cartels and price agreements.

What part does management play in dictating the buying policies of a company? To what extent does management dictate purchases from his golf or club friends? I consider this type of policy a greater evil than other forms of back door selling. Coming from within and from the top, there is no control of it unless management recognizes that it too is destructive of organization and all of its attending evils. My friends must sell as any other salesmen have to sell, and I believe management's direction of purchases from friends is one of the most evil and destructive elements we have in business. It represents unfair and destructive competition. Invariably it results in higher costs and is most destructive of purchasing and cost reduction initiative. Other things being equal, friendship counts and will always be part of business. But all factors must be equal in a friendship purchase or it is not a good buy.

CHISEL MORTISER!



## SLASHES COSTS IN GENERAL MAINTENANCE BY REPLACING HAND TOOL OPERATION

his fine English tool, now available for the first time, is adaptable to a wide range of uses and accessories in both factory and field. It is quickly adjustable to various sizes of mortise. It serves as both a bench drill and your hand drill. With auxiliary handle and 8 inch buffing head, it is an efficient polishing tool. Steel drilling capacity 3 g" diam. Speed on full load 450 r.p.m., 110-120 volts universal A.C., D.C. Save Costs1 Get this long needed tool, today!

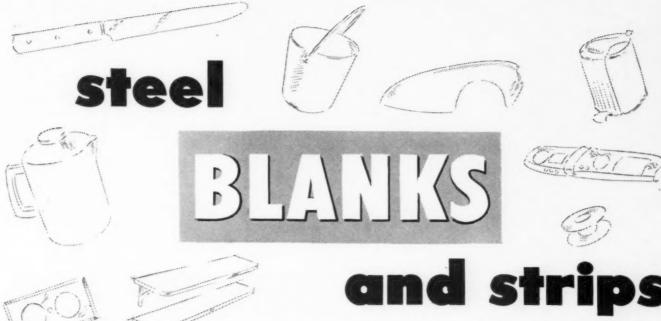
LOWER YOUR PRODUCTION COSTS WITH THESE FINE ENGLISH TOOLS. PROVED FOR HALF A CENTURY IN 50 WORLD MARKETS. NOW AVAILABLE FOR THE FIRST TIME IN THE UNITED STATES





8. WOLF & CO. LTB. LONDON
Distributor Particulars on request
d Service Depot New York City,
o. U.S. Factory Representative, Fred

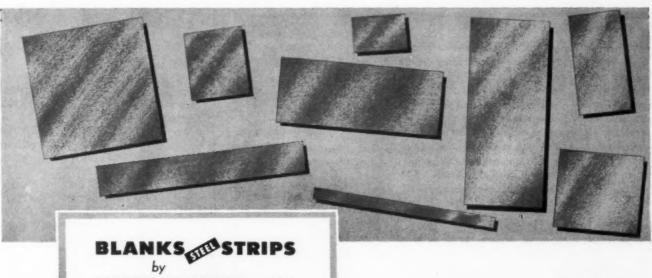
(Please turn to page 340)



to your exact size

Whatever the quantity, Harry Harris & Company can supply you *now* with prime blanks or strips in cut lengths to your exact specifications.

Don't waste needless operations and valuable manhours handling large sheets. Let Harry Harris give you what you want when you want it!



HARRY HARRIS & CO.

33 PASSAIC AVE. • KEARNY, NEW JERSEY • PHONE: KEARNY 2-7400 REctor 2-0411



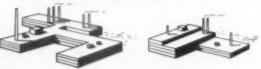
# Your "shipping dollar" goes farther with American Boxes and Crates

You can't safely count your profits until your product is delivered! That's why American Box Co. engineers and technicians have devoted 48 years exclusively to the development of improved boxes and crates that do a bigger, better job, for less money.

The result: Today you can depend on American for unexcelled box-making service—"engineered" to fulfill your specific requirements for size, shape, strength, weather conditions, handling, quantity, etc.; yet carefully planned to give you every advantage of economy in materials, and modern, efficient manufacturing processes. How can you be sure you're getting the most for your "shipping dollar", until you've tried American? Complete details promptly at your request. No obligation.

#### TWO GREAT PLANTS (Est. 1901)

Located for easy access to all box-making needs. Main plant in Cleveland, Ohio, branch plant in Marion, S. C., feature most complete, modern facilities.



# THE American Box co.

1901 W. 3rd Street • Phone: MAin 4221 • Cleveland 13, Ohio Branch Plant: Marion, S. C.



#### WIREBOUND CRATE

Strength-tested, lightweight.
Built-in support features.
Easy handling, stacks
well. Supplied flat for
wrap-around assembly.



#### FIBREBOARD BOX

Attractive, low-cost, Fully enclosed, panels steel stapled to wood cleats. Superior reinforcements. Supplied flat for easy assembly



#### NAILED WOOD BOX

Materials and workmanship to meet or surpass Government Specifications for domestic or export shipments.

# **Back Door Selling**

(Continued from page 338)

The matter can be summed up rather simply. Treat salesmen who call on you as you want the salesmen of your company to be treated when they call to sell their wares. Buying and selling policies should be co-ordinated to keep sales active. to establish fair competition and above all, to keep the profit motive alive.

In a regulated economy, purchasing agents and salesmen will be order takers, and all prices will gravitate to a common level. The government now is against price agreements and cartels, but the government will be the first to establish cartels, fix prices, and eliminate competition if it takes over.

# When the Innocent Must Suffer

(Continued from page 148)

ment of the purchase price thereof need not be in writing, but may rest wholly in parol, and the seller may deliver possession to the buyer on such condition, and a subsequent purchaser without notice of such reservation acquires no title as against the original seller."

## Innocent Breach

It is well established law that one who breaches a valid contract is legally liable although the breach was unintentional and innocently accomplished. Also, an unintentional or innocent breach of a valid contract always increases normal or ordinary liability of the innocent party.

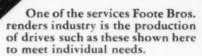
An extreme but authentic illustration of this law involves warehousemen. All higher courts agree that a warehouseman is not, under ordinary circumstances, liable for loss of or destruction of stored merchandise unless the testimony proves conclusively that the loss resulted from negligence of the warehouseman or his employees. Recently. however, a higher court held that although a warehouseman innocently stored goods in a warehouse different from the warehouse listed in the warehouse receipt or advertisements, the warehouseman is definitely liable as an insurer for any and all losses.

For illustration, in Ricks Transfer & Storage Company v. Smith, 204 S. W. (2d) 12, the testimony showed that one Smith read the classians.

(Please turn to page 342)

meed

drive like these



- 1. Here is a giant gear reduction unit engineered to stand the pounding, crushing force necessary in the production of asphalt tile.
- 2. Here is a textile mill drive that not only provides a number of shaft speeds, but also permits gear ratios to be changed quickly.
- 3. Here is a small, compact unit that permits a quick change from forward to reverse on a predetermined time cycle.

If you are now using special drives on the equipment you manufacture, be sure to investigate the facilities of Foote Bros.' large plants completely

equipped to produce gears and drives to meet practically any need.

If you are faced with a problem in the design of gears or transmission equipment, Foote Bros. engineers will gladly assist you in finding the correct solution.

Of course, Foote Bros. also can furnish a complete range of standardized speed reducers to meet almost any industrial need. The more popular sizes and ratios are available from stock.

FOOTE BROS. GEAR AND MACHINE CORPORATION Dept.PG,4545 South Western Boulevard Chicago 9, Illinois

**ENCLOSED** GEAR DRIVES FOR ANY INDUSTRIAL USE







# SPECIAL BOLTING

# FOR HEAVY MACHINERY

FOR over 30 years ERIE has specialized in the manufacture of high quality bolting. We use the very latest equipment for heat treating, machining, grinding and threading. We are certain that we can produce better bolting at a saving to you because we are specialists - send us your bolting speci-Acation for our estimate.



A DEPENDABLE SOURCE OF HIGH QUALITY BOLTING FOR RAILROADS, REFINERIES, DIESELS, FARM MACHINERY, EXCAVATING EQUIPMENT AND ALL TYPES OF HEAVY MACHINERY.

# ERIE BOLD & NUT Co.



## When the Innocent Must Suffer

(Continued from page 340)

sified ad section of a telephone directory, which showed that a warehouse was located at 411 East 4th Street. Instead of the warehouseman storing Smith's merchandise at this latter location he stored the goods in his warehouse at 214-216 West Fourth Street, and which was safer than the warehouse at 411 East 4th Street. The warehouse was destroyed by fire and Smith's merchandise was destroyed.

Smith sued the warehouseman and based the suit on the fact that the warehouseman was liable as an insurer because he did not store his merchandise in the warehouse at 411 East 4th Street. In fact Smith contended that the warehouse company was liable for the loss, irrespective of negligence, simply because the warehouseman had not informed him that his goods would not be stored at 411 East 4th Street.

The higher court held the warehouseman fully liable to Smith without any proof that the fire resulted from negligence of the warehouseman. The higher court said:

"He (Smith) never knew, and was never informed by Ricks (warehouseman), that he contemplated storing the property at any other place than in the warehouse where he advertised that he was doing business."

# Who Pays the Freight?

(Continued from page 101)

men, but we believe that it is an artificial price system imposed by big business on the entire business community of an industry in order to give to the older, bigger, wellestablished companies an unfair advantage. This was made abundantly clear in the Cement Case decision. We are therefore very suspicious of any bill which would legalize in whole or in part any element of the basing point price system.

basing point price system.

"We in the Farmers Union believe that decentralization of industry is to the advantage of the country as a whole. There are great populations west of the Mississippi River and south of the Mason-Dixon Line, who are entitled to the advantages of industrial development comparable to that of the East. Farmers, too, would share in this development in reduced prices resulting from lower transportation

(Please turn to page 344)



...new handy selector for pump packings

If you're using reciprocating or centrifugal pumps . . .

If your packing seals against fresh or salt, hot or cold water, steam, oil, brine, ammonia or other fluids and chemicals...

If you want to know the correct packing for each application . . .

If you're interested in using fewer styles of packing to do the job ...

... Then you'll want this new J-M Packing Selector to keep on hand.

This handy new packing selector gives you brief, specific data on ten popular styles of Johns-Manville Packings that serve over 90% of all pump packing applications... shows you where to use each style for greatest efficiency and economy of service.

Here's the quick, easy way to check on your pump packing efficiency . . . to find out about lower packing costs . . . to get higher efficiency and longer life from your packings. Use the coupon, or write for your copy today to Johns-Manville, Box 290, New York 16, N.Y.



Johns-Manville

PACKINGS & GASKETS

Johns-Manville

Box 290, New York 16, N. Y.

Please send me your packing selector for reciprocating and centrifugal pumps (PK-39A).

Name

Firm

Address

City\_\_

State

Pur-



# Quality Name Plates

Etched or lithographed, Ecoa quality name plates are themselves economical because they are permanent marks of distinction which add sales appeal to your product. They look better—longer, Ask us to quote on your designs—or if you

better—longer. Ask us to quote on your designs—or if you wish, our Art Department is available to assist you in the design of your name plates. You can save money, too, by using one of nearly 5000 shapes and sizes for which we have dies in stock.

FREE BOOK If you or your engineering department can use this book, which shows the shapes and sizes of nearly 5000 dies we have on hand, write for it on your letterhead. Name plates made in these shapes and sizes save the cost of special tools.





# ETCHING COMPANY OF AMERICA

1520 MONTANA ST., CHICAGO 14, ILL., DEPT. C-3

Metal Name Plates, etched or lithographed • Plastic Name Plates, Dials and Panels, lithographed or screened • Etched Metal Scales, Clock Dials, Instrument Panels, Art Navelties, Advertising Specialties • Etched Metal Panels for elevators and architectural uses.



SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

# Who Pays the Freight

(Continued from page 342)

costs and great markets created by industrial populations who would buy their products."

## A Detailed Study

Data on current pricing practices and the probable impact of f.o.b. mill pricing on industry in general has been sought by the Senate Committee through a questionnaire addressed to Chambers of Commerce in representative industrial areas. A portion of the reply covering the Cleveland area—so far as it affects the principal steel producing and using industries—is presented in tabular form herewith. The complete return dealt also with food products, electrical products, clothing and textiles, paint and chemicals, printing and publishing.

In summary, the questionnaire reveals that it is impossible to generalize even within a single classification of related industries; that pricing policies include almost every degree of freight absorption, from strictly f.o.b. origin to complete uniformity of selling price on a national basis; that pricing policies are designed in most cases to promote wide distribution and to meet competition; that cost to consumer is not greatly affected by changes in the pricing system, as such; that industry is not geared to operating in a limited local area, either in its procurement of raw materials or the distribution of its products; and that while some migration of industry may be expected as a result of f.o.b. mill pricing, from a consideration of either sources or markets, the particular cases and the extent of such movement are unpredictable.

# Material Control System Aids Purchasing

(Continued from page 118)

and see how long it will take to catch up, if it is overloaded. If a given department is overloaded, we have to plan to add another shift or order new equipment. For example, we knew, as early as last December, that we were going to have to put on another shift in one department in March."

An accurate and comprehensive plan of materials control is of definite aid to the Purchasing Department. "The materials control system has worked very well from our viewpoint," says G. K. Geisbuhler,

(Please turn to page 346)



IMPROVEMENTS

\$35,923,192.



we took

NEW

FREIGHT CARS, ETC.





NEW

LOCOMOTIVES

\$27,464,658.



To give you finer Freight Service the Baltimore & Ohio has spent, in the last three years, \$173,618,959. Constantly doing things better—the B & O way—means vast expenditures. All this adds up to better facilities, faster trains, and dependable service. We pay what it takes to have what it takes.

Those three years of "doing things better" saw 212 new locomotives on our rails, together with 19,139 new freight cars. They saw new classification yards and extensive terminals; heavier rail to carry our trains, better signals to speed them, modern communications to report their positions and furnish on-the-spot location of cars for customers; efficient, latest-type coal and ore facilities.

Never have we been better able to meet the needs of our customers. And this constant improving shall continue. As it does, you will have more and more reasons for depending on B & O service. Ask our man.

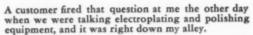


# Baltimore & Ohio Railroad

Constantly doing things - better!

# "What's so good about H-VW-M low-voltage GENERATORS?"

P. R. LYONS . District Manager . H-VW-M Cleveland Office



"Man, take a look at these features," I replied, with all the enthusiasm first hand knowledge of H-VW-M low-voltage generator performance can arouse. "Fan action of commutator risers increases ventilation of field and rotor coils! Rolled steel ring, set in frame, lowers center of gravity! Liberal-size, sleeve type bearings assure long, quiet, trouble-free life! Moulded-in 'equaload' shunts distribute brush load equally, reduce resistance! Copper graphite brushes provide optimum commutator efficiency! Fully insulated brush holders eliminate current pas-sage through springs and fingers! Copper pig tail bar lowers resistance of circuit.

"Add these features to H-VW-M's more than 70 years' experience with all low-voltage electrolytic applications—and I think you'll agree that H-VW-M motor generator sets are worth looking into for efficient, low cost power production," I concluded.

Ask your H-VW-M representative, or write "Headquarters, for Bulletin G-102, our new compact catalog of generator information.





\* Hanson-Van Winkle-Munning

has supplied the plating industry

gineers are thoroughly familiar

with every step in the process of electroplating and polishing. It

is this overall knowledge that has

made H-VW-M "Headquarters"

for electroplating and polishing

equipment, supplies and techni-

cal assistance.

for over 70 years. Our sales-en

# HANSON-VAN WINKLE-MUNNING COMPANY

MATAWAN, NEW JERSEY

MANAWAN, NEW JEKSET

Manufacturers of a complete line of electroplating and polishing equipment and supplies

Plants: Matawan, New Jersey \* Anderson, Indiana

Sales Offices: Anderson \* Chicago \* Claveland \* Dayton \* Detroit

Grand Rapids \* Martwan \* Milwauke \* New Moven \* New York \* Philadelphia

Pittsburgh \* Rochester \* Springfield (Mass.) \* Strafford (Cenn.) \* Utica

G 4872

# USE THEM INDIVIDUAL **BOLT THEM TOGE**

Fig. 732 Pat'd Pats. Pend.





# Ready-Made WORK BENCHES OF STEEL

Made in standard heights, widths and lengths, these "HALLOWELL" units can be used either individually or bolted together to form a continuous work bench-most any length-a money-saving feature not practicable with "nailedtogether" wooden benches.

The serviceable, ready-made "HALLOWELL" Work Benches of Steel are ideal equipment for modern shops. "HALLOWELL" Benches have smooth, long-wearing steel tops, are also available with heavy, high-grade laminated wood tops . . . or steel tops covered with "Tempered Presdwood".

The "HALLOWELL"-rigid as a rock-does not require costly bolting to the floor.

Write us for the name and address of your nearest "HALLOWELL" Industrial Distributor and for your copy of the "HALLOWELL" Catalog.

OVER 46 YEARS IN BUSINESS

JENKINTOWN, PENNSYLVANIA

**BOX 590** 

CHICAGO

DETROIT

ST. LOUIS

SAN FRANCISCO

# Material Control System Aids Purchasina

(Continued from page 344)

Purchasing Agent. "The boys in Central Planning really know just where they stand at all times, and if any specific information is required of them, they usually have it right before them. We are in and out of one another's offices frequently, conferring on the innumerable details pertaining to the procurement of materials, particularly those that are

in short supply.

"Our job, of course, is to find market sources and to obtain satisfactory quality and prices. That, I'm glad to say, we have been able to do with reasonable success thus far; at any rate, we haven't had to shut down on account of shortages. Some items are still very hard to get, of course, but we have managed to keep going in one way or another. In the development and pricing of new products, Engineering and Processing give us advance information so that we are prepared to quote sources and prices as soon as they are ready to go ahead with production. Such delays and short lead-times as we have encountered are generally due to present closeordering policies. As soon as Central Planning has the information on a requirement, it is promptly made available to us.

"We have two buyers, in addition to myself. Norman Krause buys production materials, and W. G. McElroy buys the non-production items. Together, we usually manage to keep materials coming in as re-

quired.

"You might add that, besides keeping our own plant running on schedule, no customer has yet to stop production because of a shortage of parts from Woodall."

1 1 1

## EDUCATIONAL DISPLAY FOR SCHOOLS, COLLEGES

The Dayton Rogers Manufacturing Co., Minneapolis, Minn., has available for use in trade schools, institutions and engineering colleges, a die cushion display board measuring 36" x 50", having mounted thereon a standard installation of a pneumatic die cushion of general design and construction. The material is of standard practice and applies to all types of pneumatic die cushion installations and designs. The two major units on the board are cross-sectioned, giving complete instructions as to their design, operation and general construction. Twelve loose-leaf pages are mounted on the board showing standard installations and sizes from 5" to 24".

The display is available to institutions of instruction upon application.

YOU SAVE up to

30%

YOU DON'T PAY FOR SCRAP LOSS OR "REJECTS" WHEN

# Reynolds

MAKES ALUMINUM PARTS TO YOUR SPECIFICATIONS

NO SORTING OR SCRAP HANDLING

NO SHIPPING OR SUPPLY PROBLEMS

NO LABOR OR MACHINERY PROBLEMS

Scrap and rejects require handling and shipping that sacrifice profits. When you use Reynolds production facilities, this scrap and reject metal goes back into remelt at the source...you never bother with it, you pay no handling charge.

Here is a complete aluminum service from mine to finished products. You specify quantity and delivery. Reynolds delivers inspected parts or complete assemblies. You get all of the advantages of mass production without the worry of factory space, machine and manpower requirements. And you can count on a fixed cost. That's why Reynolds is delivering more and more parts and assemblies to some of the nation's largest manufacturers.

For the complete story of advantages, send for booklet explaining this unique service. Return the coupon below or call the Reynolds Sales Office listed under "Aluminum" in your classified telephone directory. Reynolds Metals Company, Industrial Parts Division, Louisville 1, Ky.



# Reynolds Metals Company



I NOUSTRIAL PARTS DIVISION

A complete aluminum fabrication service including blanking • embossing • stamping • drawing • spinning • forming • roll shaping • assembling and finishing •

REYNOLDS METALS COMPANY
Industrial Parts Division
2056 South Ninth Street, Louisville 1, Kentucky
Send the new folder on Aluminum Parts and
Assemblies.

Name\_\_\_\_\_Title\_\_\_\_\_\_
Company\_\_\_\_\_\_
Street Address\_\_\_\_\_\_
City\_\_\_Zone\_\_\_\_State\_\_\_\_\_

REYNOLDS PIONEERING MADE ALUMINUM COMPETITIVE...TAKE ADVANTAGE OF IT!

# TOUREK SCREW MACHINE PRODUCTS



Many manufacturers find that in Tourek's wide range of standard Ball Joints there is a type and size which meets their exact requirements. You, too, can simplify the design and improve the performance, as well as reduce the cost of your products by specifying standard Tourek Ball Joints... Our large stock assures prompt delivery.

BALL JOINTS

Or, if you are planning a new product calling for special Ball Joint design, call upon Tourek for experienced advice.

Write for Tourek's 16-page illustrated catalog, containing complete specifications on 12 standard types in 54 sizes as well as data on special





Your screw machine product requirements, when produced at Tourek, are the result of coordinated engineering know how, the latest in modern high-speed 6-spindle automatics, skilled operators, plus 28 years of experience.

SCREW MACHINE **PRODUCTS** 





Your production parts, from 1/6" to 21/6" are made with the utmost precision and delivery is assured according to schedule.

An inquiry on your screw machine prod-uct needs is invited. Send a blueprint or sample for quotation.





MAKERS OF QUALITY SCREW MACHINE PRODUCTS

J. J. TOUREK MFG. CO. 4701 W. 16th Street Chicage 50, Illineis





# Coordination of Decentralized Purchasing

(Continued from page 137)

It wasn't a reduced price or second quality merchandise, so he bought his files at the hardware store. The same condition existed in hardware stores in every other city where the firm had plants.

Checking with the vendor brought out the fact that their system of discounts made this possible. In spite of the discrepancy, they didn't consider it good policy to alter their discount schedule. Consequently. the customer firm buys its files at the

hardware stores.

With any of the first three plans mentioned this saving to the company would not have been possible. Even though the annual purchases of files may not be enough to make a change of organization advisable, the same thing can happen on other

items purchased.

Centralized coordination would quickly bring to light this and any other price variances in the company's various plants. Placing local hardware stores on the approved vendor list would take time under centralized control, but a recommendation by the Central Coordinator of Purchasing would automatically start saving the company money.

Other advantages inherent to this plan of decentralized purchasing with centralized coordination in-

clude the following:

1. Hand-to-mouth buying made possible when such a policy is indi-

2. Eliminates the accumulation of excess stocks at central points.

3. Easy to take care of emergency requirements.

Ordering is more efficient.
 Valuable local sources can be

discovered and developed.

6. Able to take advantage of cash discounts quicker.

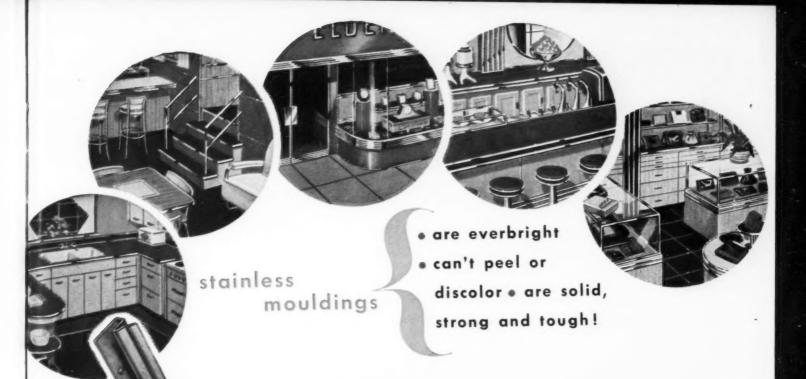
7. Possible saving on transportation costs.

Of course all of these arguments in favor of decentralized purchasing with centralized coordination can be attacked. There are always two sides to the question, but there is one advantage of this plan that is often overlooked. This advantage is not possible in any of the other suggested forms of organization.

It is vital to the continued success of purchasing.

What other form of purchasing organization gives the plant purchasing agents, men on the way up, authority and responsibility, the opportunity to develop their abilities and to learn through making actual

(Please turn to page 350)



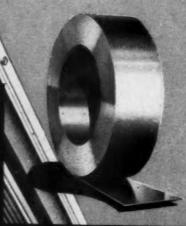
stainless mouldings fabricate better, deliver maximum consumer benefit, when you choose and use precision-made

# Superior STAINLESS STRIP STEEL

Because SUPERIOR Stainless Strip Steel handles more easily in mouldings manufacture, you enjoy an extra advantage . . . and easier handling is a built-in factor because we have the specialist's know-how. We produce only strip steels . . . to strictly-maintained standards of quality and precision in every grade, temper, dimension and finish . . : SUPERIOR through and through!

Superior Steel CORPORATION

CARNEGIE, PENNSYLVANIA



# PURCHASING AGENTS! DO YOU BUY ANY CHEMICALS... IN ANY FORM?

HERE'S NEWS: More and more purchasing agents in every industry, even those buying a single item, are finding it pays off to have at hand this one chemical market authority—O.P.D. on their desks every Monday morning.

WHY? Because it gives the whole week's round-up of chemical news from seller to buyer (5,000 to 6,000 chemicals and related materials quotations) in one business hour.

# NEWS FORMS CLOSE 4 P.M. FRIDAY PAPER DELIVERED 9 A.M. MONDAY.

If you are a purchasing agent the chances are you buy at least one chemical in some form. If you do, you can't afford not to tighten your grip by having authoritative up-to-the-minute news on that item.



59 JOHN STREET, NEW YORK 7 FOR CHEMICAL BUYERS

THE MARKET AUTHORITY SINCE 1871

# Coordination of Decentralized Purchasing

(Continued from page 348)

decisions? Does this plan give them the wealth of experience of ten, twenty, or thirty other men confronted with the same problems?

This plan, decentalized purchasing with centralized coordination, develops *men* because it places responsibility squarely on their shoul-

ders, it gives them the authority to carry out this responsibility, and it gives them help and guidance through coordination.

Its only weakness lies in weak

men in the organization.

Its strength lies in its ability to develop all purchasing agents within the organization into strong, efficient men—men who will be ready to take over major executive posts when the time comes.

# Consolidated Military Procurement

(Continued from page 108)

Board, National Military Establishment, Pentagon Building, Washington, D. C.

The list does not include all items bought for military use, but only those which have been assigned to a single office for procurement. It will be enlarged from time to time as the responsibility for purchasing additional items is assigned to specific procurement offices. For information as to the location of Army, Navy, and Air Force buyers of military items not now included in the list, write to:

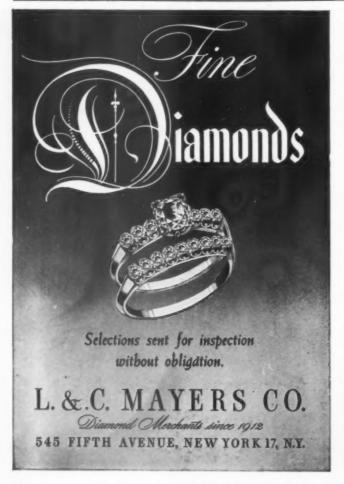
Logistics Division, Department of the Army, Washington 25, D. C.

Office of Naval Material, Department of the Navy, Washington 25,

Procurement Division, Air Materiel Command, Wright-Patterson Air Force Base, Dayton, Ohio.

In respect to subsistence items (food, food products, and beverages) which are in general assigned to the Army Quartermaster Purchasing Office in Chicago, arrangements have been made for certain purchases to be made by Navy stations. These items include (A) non-perishable subsistence items that either are not on the Army ration or

(Please turn to page 352)



# HODELL Precision SPROCKET CHAIN

for fine mechanisms

A new and exclusive technique developed by Hodell has produced a new Precision Sprocket Chain suitable for use in fine mechanisms.

The secret of this achievement lies in the exact and accurate pitch. In chain as fine as 82 links per foot, our exclusive process holds tolerances to such precision standards as to make variations practically negligible. This fine chain has proved ideal for delicate machinery such as cameras, motion picture projectors, vending machines, toys and many other devices. Replacing gears, it often reduces cost and gives better performance.

Send for full information, samples and prices.







Established 1886

HODELL CHAIN COMPANY

3924 COOPER . CLEVELAND 3, O.

DIV. of THE NATIONAL SCREW & MFG. CO.

# ROLLICK ALLOYS

Now...

# One Piece Of Inconel

This new Rolock construction of sand seals eliminates all radial welds and makes them integral with the body of your Homo-Carb furnace retort... facilitating installation and maintenance.



Inconel Retort with one piece integral Sand Seal

# Tiece Sand Seal Rings



The One Piece seal insures perfect fit, which means sound, full penetration, gas-tight welds . . . the weld metal having the same strength and resistance to high heat and corrosion as the parent metal itself. Rolock Inconel retorts prevent atmosphere leakage . . . lengthen life of electric heating elements . . . do away with bulging or sagging.

If you've been troubled by embrittlement from carburizing or gas cyaniding atmospheres . . . and you want to cut heating costs, improve work, specify Rolock Inconel Retorts with the new *One Piece* integral Sand Seal . . . for original or replacement equipment.

Offices in: PHILADELPHIA · CLEVELAND · DETROIT · INDIANAPOLIS · CHICAGO · ST. LOUIS · LOS ANGELES

ROLOCK INC. . 1270 KINGS HIGHWAY, FAIRFIELD, CONN.

JOB-ENGINEERED for better work
Easier Operation, Lower Cost

5RL49

Want Additional Product Information? See Page 19.



# It's a special pump at no extra cost

You don't have to pay special production costs for bulky, over-size corrosion-resistant pumps. Ampco's centrifugal pump is a standard production model, designed to handle your corrosive and erosive liquids efficiently—and it's yours for a standard-model price.

# Check these important Ampco Pump features

- Casing and Volute are streamlined for efficient conversion. Heavy cross-section prevents deformation.
   No blind tapping to invite corrosion.
- Wearing rings are centrifugally cast of Ampco Metal—wear and erosion-resistant to protect casing and cover, and maintain efficient running clearance.
- Strong, corrosion-resistant impeller withstands hydraulic shock, cavitation, and erosion by abrasives in suspension.
- Stuffing box is well-porportioned and extra-deep, constructed for heavy duty.
- It is the only bronze pump that can be repaired by welding with Ampco-Trode electrodes of proper grade to match the base metal.
- All sizes available for either pedestal or close-couple mounting.

Get complete information from your nearest Ampco Field engineer, today!



FREE Bulletin on Ampco Centrifugal Pumps
Tear out this coupon and mail today!

Dept. P-3, Milwauk	C.	4,	Wiscons	in	
Send me Bulletin	85	on	Ampco	Centrifugal	Pumps
Name			*****	Position	
Company			******		
Street Address				*******	
City				) State.	

# Consolidated Military Procurement

(Continued from page 350)

are not required in large quantities; (B) perishable subsistence items that either are for the convenience of ships visiting in coastal areas or are not required in large quantities. The principal Navy installations where such purchasing is done are:

(A) and (B)

Naval Shipyard Boston 29, Mass.

Naval Shipyard Philadelphia, Pa.

Navy Purchasing Office 844 North Rush Street Chicago, Illinois

Navy Purchasing Office 1206 South Santee Street Los Angeles, Calif.

Navy Purchasing Office San Francisco, Calif.

Navy Purchasing Office 111 East 16th Street New York, N. Y.

Naval Air Station Jacksonville, Fla.

Naval Air Station Miami, Fla.

Naval Supply Depot Seattle, Washington

Naval Gun Factory Washington 25, D. C.

(A)

Naval Shipyard Charleston, S. C.

Naval Air Station Corpus Christi, Texas

Naval Station Algiers New Orleans, La.

Naval Supply Depot Newport, R. I.

Naval Supply Center Norfolk, Va.

Naval Air Training Base Pensacola, Fla.

(B)

U. S. Naval Academy Annapolis, Maryland

Submarine Base New London, Conn.

Naval Shipyard Portsmouth, N. H. FULL LINE . . FULL VALUE. FULL SERVICE

We have repeatedly urged users of welding fittings to accept no less than the full line. When we say "full line" we don't just mean its completeness . . . though it is the world's most complete line of forged steel fittings and flanges . . . and it does contain the widest range of types, sizes, weights and materials.

When we say "full line" we mean full value-extra value-more and better features than can be found in any other fitting.

The technical brains and forging skills which conceived these extra values continue to be available to you through the Taylor Forge organization, and through the Taylor Forge distributor who is your industrial neighbor.

Since Taylor Forge welding fittings "have everything," why compromise on less than the best?





TAYLOR FORGE & PIPE WORKS General Offices & Works: Chicago 90, Ill. (P.O. Box 485) Eastern Plant: Carnegie, Pa. Western Plant: District Offices-New York: 50 Church Street • Philadelphia: Broad Street Station Bldg. Fontana, Calif. • Pittsburgh: First National Chicago District Sales: 208 S. LaSalle Street 

Houston: City National Bank Bldg.

Los Angeles: Subway Terminal Bldg. Bank Bldg. •

Do your piping systems create any fitting or flange problems for you?.....

If the information you need goes beyond the simple return of the coupon at the right, please write us fully. You will receive a prompt and detailed reply.

V/ho	is	mv	negrest	Taylor	Forge	Distributor	١

Put my name on your mailing list to receive informative literature.

Name.

Position.

Company\_

Street Address.

City\_

Zone\_

State

STO TAYLOR FORGE WELDELL

517-0349 Mail to Taylor Forge & Pipe Works, P.O. Box 485, Chicago 90, Illinois

Want Additional Product Information? See Page 19.





Retail display case for famous LA CROSS products molded for Schnefel Bros. Corporation. Drawers in rear hold stocks of items displayed.

> Write for 8-page booklet A describing the complete MACK facilities-no obligation.

# completely pped to serve you!



- WAYNE, NEW JERSEY
- ARLINGTON, VERMONT
- WATERLOO, P.Q., CANADA





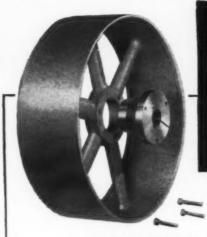
Figured any way you look at it, letting MACK figure on your plastic molding jobs makes good sense. In the business since the early days of the industry, MACK has the experience and the facilities to do the job right. Choice of materials, design and mold making, finishing and delivery are all carefully followed through to insure the best results for you. That's why many MACK customers have been with us for a quarter of a century. Inquiries are invited - address Mack Molding Co., Inc., Main Street. Wayne, N. J.

THREE PLANTS

NEW JERSEY VERMONT WATERLOO,

PO CANADA

# NEW PYOTT QUE-DEE CAST-IRON PULLEYS



IMMEDIATE **DELIVERY** from Complete **Factory Stock** or your Mill Supply

Pyott QUE-DEE Pulley with TAPER TIGHT Bushing

Reduce Installation Cost. Provide Positive Lock on Shaft. Easily Installed or Removed by Tightening or Loosening 3 Bolts.

Pyott famous Red Face Pulleys are now available in the Que-Dee (Quick Detachable) style and are used with the same interchangeable Taper-Tight Bushings which have long been used with Pyott Que-Dee V-Belt Sheaves. That means easier, faster, more economical pulley installation and removal. It assures a positive fit of pulley on shaft, even where a shaft is slightly over-size or under-size, because the Taper-Tight Bushing provides a positive, powerful pull-up by merely tightening three bolts. The new Que-Dee Pulleys are available in popular diameters and face widths.

WRITE FOR CATALOG 70A



EASY TO INSTALL AND REMOVE

The Pyott Taper-Tight Bushing with standard key-way slips easily over the shaft. The tapered hub of the Que-Dee Pulley slides easily into position on the Taper-Tight Bushing. A few turns on tightening bolts pull pulley, bushing and shaft into a positive, powerful, pull-up fit. For dismounting, the tightening bolts, inserted in deinting holes, act as jack screws to loosen the pulley.

FOUNDRY & MACHINE CO. 328 NORTH SANGAMON STREET CHICAGO 7, ILLINOIS MONEOE 6-0296





Springs can make or break your product.
Our quality control system has been mathematically worked out to hold every spring in every batch as near perfection as humanly

possible. Uniformity in shape and size saves you assembly time. Avoidance of deviation in all other important characteristics enables each spring to do the job it is assigned.

It is true that needlessly close limits, difficult bends, certain end formations, or other special factors, can easily run up spring costs. If these details are really indispensable, Reliable can follow them to the letter. But when you give us a chance, we scrutinize your specifications to assure utmost economy with due consideration to proper materials, reasonable tolerances, and correct design.

Quality control makes Reliable springs worth more—yet they cost you no more.

We produce all types of compression, extension, torsion, and flat coil springs, also wire forms and spring stampings. Send for Bulletin "Common Sense in Spring Design".

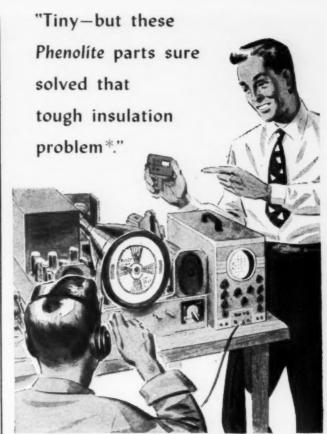
## THE RELIABLE SPRING & WIRE FORMS CO.

3167 Fulton Rd.

Cleveland 9, Ohio

Representatives in Principal Cities





\* Required:

A material with very high insulation resistance under all atmospheric conditions—with good mechanical strength and ready machinability. Phenolite, laminated plastic, with all these qualities, plus—was the perfect answer.

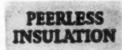
In your development of efficient, economical products, it pays to investigate



About one-half the weight of aluminum, possesses an unusual combination of properties—a good electrical insulator, great mechanical strength, high resistance to moisture; ready machinability. Sheets, Rods, Tubes, Special Shapes.



A tough, horn-like material with high dielectric and mechanical strength. Excellent machinability and forming qualities, great resistance to wear and abrasion, long life, light weight. Sheets, Rods. Tubes, Special Shapes.



The first fish paper developed for electrical insulation. Strong, smooth, flexible, with excellent forming qualities. High dielectric strength. Sheets, Rolls, Coils.

To help you solve your specific development problem available without obligation—National Research and Engineering Service.

NATIONAL VULCANIZED FIBRE CO.
WILMINGTON DELAWARE

Offices in



DELAWARE
Principal Cities

Since 187



# STEEL STRAPPING

# speeds shipping to keep up with faster production flow

The Plasticrete Corp., Hamden, Conn., worked out a faster production system on cinder blocks. Problem: how to package these "cubes" of 90 or more blocks for shipping at this speeded up production rate. Solution: tying the blocks together into one compact unit with Stanley Steel Strapping. Just another packaging, shipping accomplishment for the Stanley Steel

Strapping System. Can save you money, too.

Write for information on the complete line . . . reels, tools and accessories. The Stanley Works, Steel Strapping Division, 144 Lake St., New Britain, Connecticut.



STEEL STRAPPING AND CAR BANDING SYSTEMS



HARDWARE . HAND TOOLS . ELECTRIC TOOLS . STEEL STRAPPING





Tubular and Split Rivets in All Rivet Metals

CHICAGO RIVET & MACHINE CO.

#### DEGREASING SOLVENTS for . . .

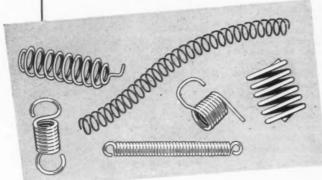
- Both ferrous and non-ferrous metals, and adverse operating conditions, where maximum stability is called for — PERM-A-CLOR, the most highly stabilized of all trichlorethylene solvents.
- Average applications TRIAD (identical to Perm-A-Clor in cleaning power).

## ALKALI AND EMULSION CLEANERS for . . .

- Aluminum parts and painted surfaces.
- Brass, aluminum and white metal parts.
- Heavy-duty cleaning of iron and steel and their alloys.
- Cleaning and neutralizing prior to Vitreous enameling.
- Electrolytic cleaning especially for plating.
- Heavy-duty stripping of pigmented oil paints, synthetics and baned enamels.
- Removing all kinds of oils and insoluble dirt, without attack on surface or coating.



# GET A SPRING CHECK-UP ON COSTS



With buyers more cost-conscious, it's time to double-check your products price-wise. What about the springs you are now using, or planning to use? Are you sure they are the most practical and economical springs for the jobs required?

Lewis Spring engineers have saved manufacturers many hundreds of dollars by working carefully with design engineers in specifying more economical, but equally effective springs, for their products. Fancy "extras" don't contribute to product appearance or efficiency in most cases.

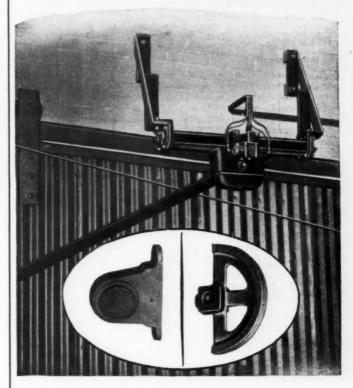
You can rely on Lewis Engineers' recommendations because they are underwritten by years of experience in the design, production and application of all types of springs for all types of products.

Get a spring check-up now. There's no obligation.



THE FINEST LIGHT SPRINGS AND WIREFORMS
OF EVERY TYPE AND MATERIAL

# Pneumatic Door Operating Equipment MUST STAND UP



The National Pneumatic Company originated and developed door operating and control equipment that is recognized as standard throughout the entire transit industry. Their doors are installed also in many factories, public buildings, arsenals, etc.

Our forgings have been chosen for the valve blocks and segment gears. The dies for these important parts—as for all National forgings—are so designed that the fibre-like flow line structure is concentrated at points of greatest shock and stress.

Forgings are being used for more and more products because they provide unparalleled toughness, tremendous fatigue resistance, and maximum strength.

Write today for booklets and send us inquiries for custom drop forgings.

National forgings carry the trade mark "N" your guarantee of Fine Quality Forgings.

# THE NATIONAL LOCK WASHER CO.

DROP FORGING DIVISION

**NEWARK 5** 

**NEW JERSEY** 

## WELCOME BOOKLETS

I noted with great interest your article by P. V. Farrell on page 101 of the January, 1949, issue of PURCHASING.

I would very much like to obtain some of the sample booklets which Mr. Farrell describes, and would most appreciate your advice as to how this might be accomplished.

> W. P. Carroll, Buyer, Raw Materials Omar, Inc., Omaha, Nebr.

We suggest that you communicate with the firms using welcome booklets. Some have expressed to us a willingness to send specimens of their welcome booklets on request. The others may be willing to do so. The executives to address are:

E. M. Krech, Director of Purchases J. M. Huber Corp. 342 Madison Ave. New York, N. Y.

David Cunningham, Adv. Mgr. Raybestos Divn., Raybestos-Manhattan, Inc. Stratford, Conn.

Advertising Manager Continental Screw Co. 120 Mt. Pleasant St. New Bedford, Mass.

Advertising Manager Brunner Manufacturing Co. Broad & Gilbert Sts. Utica, N. Y.

Advertising Manager
General Electric Appliance & Merchandise Dept.
1287 Boston Ave.,
Bridgeport, Conn.

Advertising Manager The Torrington Manufacturing Co. 110 Franklin St., Torrington, Conn.

Advertising Manager Chase Brass & Copper Co., Waterbury 91, Conn.

Conover-Mast Publications, Inc., publisher of PURCHASING Magazine, has a welcome booklet. PURCHAS-ING'S Reader Service Department will be glad to oblige.—Ed.

## PERSONNEL YARDSTICK WANTED

Our company is in the process of analyzing its Purchasing Department staff and are interested in learning how our manpower compares with other industrial organizations.

We have been reading a leaflet which is a reprint from your August and September, 1944, issues in which you show, by various means, average sizes of the purchasing staffs for companies, grouped by dollar purchases per year.

We would be interested in receiving any additional information on this subject that you may have accumulated in recent years.

B. R., Cleveland, O.

Volume of dollar purchases is meaningless in making a purchasing

personnel comparison, unless you have figures for a company similar to your own, doing a comparative volume of business, and in general buying a kindred volume of raw materials, components and supplies, kindred buying policies and management policies.

In other words, there is little or no correlation between the number of buyers and total dollar expenditures. Obviously more buyers are required when a purchasing program involves a wide variety of items, with many orders issued to many suppliers, as compared with a purchasing program of equal dollar magnitude but consisting of relatively few and large orders for a limited range of material requirements. The amount of purchasing that a buyer can effectively handle also depends on the amount of detail procedure he is required to perform personally in connection with his orders—Ed.

## BOUQUETS

I thoroughly enjoy PURCHASING and recommend it highly.

J. K. Widmer, P. A. The Brown-Brockmeyer Co., Dayton 1, Ohio.

Your magazine, we feel, is doing an excellent job.

J. Carter, Chief Clerk Hercules Powder Co., Inc., Hopewell, Va.

Issue after issue, I find some article in PURCHASING which I feel helps me to become a more efficient P.A. I have been able, too, to secure much information on new items by making use of the "Purch" cards in each issue.

Thanks for giving us a good magazine.

Ross Burnes, P. A.,
Scripto, Inc.,
Atlanta 2, Ga.

# SALES TAX APPLIES TO INTERSTATE SHIPMENTS

In the January issue of PURCHASING, Leo T. Parker's article, "Learn from Others' Experience," the paragraph "Not Interstate" did not take into consideration the f.o.b. point regarding sales tax.

I am enclosing, for your information, a copy of a letter forwarded by Pratt-Gilbert Hardware Co. to all of its customers in Arizona clarifying the f.o.b. point.

> J. C. Owens, Plant P. A., Reynolds Metals Co., Phoenix, Ariz.

On November 18th the Arizona Supreme Court in a 2 to 1 decision in a suit brought by this company, to clarify the law pertaining to the collection of tax on sales made in interstate commerce, decided:

That tax is not collectible on merchandise sold f.o.b. points outside of Arizona. That tax is collectible on shipments sold f.o.b. Arizona points.

This opinion deals principally with the passing of title to the merchandise shipped direct to purchasers from out-of-state points of origin. On shipments sold f.o.b. points outside of Arizona, title passes to the customer beyond the taxable authority of Arizona State Tax Commission, with the transportation company acting as agent for the purchaser. On shipments sold f.o.b. destinations in Arizona, title does not pass until the merchandise is delivered to customer, and authority for collecting tax on such sales is vested in Arizona State Tax Commission . . . .

Ed. Gollwitzer, Sec. & Mgr., Pratt-Gilbert Hardware Co., Phoenix, Ariz.

#### **HEAT PUMPS**

You have an article on page 108 of your December issue regarding heat pumps. Who makes them?

C. Doorn, 1332 Fulton Ave., S. W. Birmingham, Ala.

Heat pump manufacturers include: General Electric Co., Bloomfield, N. J.

Westinghouse Electric Co., East Pittsburgh, Pa.

Muncie Gear Works, Muncie, Ind.

Servel Company, Evansville, Ind. York Corporation, York, Pa. Frigidaire Div., General Motors, Dayton, Ohio.

—Ed.

## ORDER COST

We are currently reviewing our costs of issuing a single purchase order from writing a requisition through to payment of invoice.

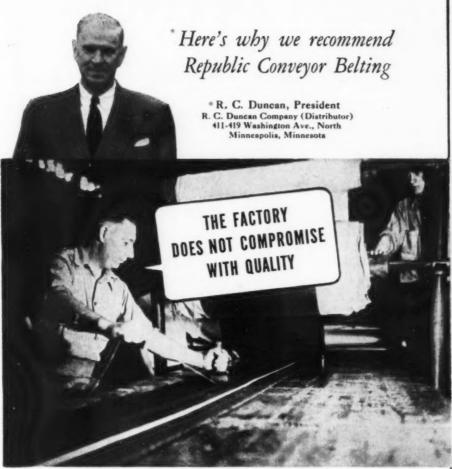
As we would like to compare our figures with a few other manufacturers not necessarily in the same type of business, the thought occurred to us that possibly you may have in your files records of similar costs developed by other companies.

If you have such figures, we would very much appreciate receiving a few for comparative purposes.

> R. P. Freehafer, P. A., The Carpenter Steel Co., Reading, Pa.

We have no data of any value on this point. We have tried from time to time to develop such information, but find that few companies have done anything on a true costing basis. Most are content to get a rough approximation by dividing total departmental cost by number of orders issued, without detailed cost distribution. In the absence of any accounting standards, the only significant comparison of such a figure is with the corresponding figure for a previous period in the same company.

We are sorry that we do not have the information, for the question frequently is asked.—Ed.



#### A sound production policy helped make Republic Rubber Division a reliable business institution.

# FOR LASTING SERVICE

Record Maker Conveyor Belting, designed for beavy service and severe operating conditions. Recommended for many types of abrasive material and for coal, rock and ore. Record maker is one of the many Republic Rubber grades of conveyor belting, meeting hundreds of usual and unusual conditions.



 Conveyor belting is a labor saving device and the demand is increasing—especially for the brands made by Republic Rubber Division.

Cotton fabric is the strength member of conveyor belting that carries the load, and the rubber cover protects the cotton reenforcement. The difference in grades depends on the quality of the rubber cover and on the rubber friction between plies. The product you convey determines the grade and specification of belt you need.

Return the coupon or write and we will give you the name of the Republic Rubber distributor in your territory. He will help you select the most practical belting for your needs.

REPUBLIC RUBBER DIVISION
Lee Rubber & Tire Corporation, Youngstown, Ohio
Lee Deluxe Tires & Tubes Conshohocken, Ps.

REPUBLIC RUBBER DIVISION

# HERE'S WHAT REPUBLIC RUBBER DISTRIBUTORS DO FOR YOU

The shopping district for your company may run east and west, north and south across the nation. Thousands of vendors offer you their wares, and which products are best for you? The many interviews, the correspondence, telephone calls, wires, and office expense to make the proper selections are costly operations. The Republic Rubber distributor can save you much of this costly procedure and he can do more than that.

One interview with a Republic Rubber distributor can include the purchase of not one, but many items at one time. One delivery, one invoice, and one check replace many transactions.

Rapid delivery from stock reduces your inventory investment and hazard. Tell the Republic Rubber distributor your conveyor belting, transmission belting and hose requirements, and he can provide the necessary technical service and carry a stock accordingly.

Your distributor of industrial supplies can be your impartial consultant, balancing the values of competing products as they apply to you. Since he has had personal experience with competing merchandise, and has seen how it performs in not one, but many plants—your industrial distributor is a valuable friend.

Purchasing experts estimate that 80% of all buying can be carried on more efficiently and economically through a distributor.

Republic Rubber sells conveyor belting, transmission belting and hose through distributors, because Republic believes that, by this method, it can serve you far better than any other way. Let us show you. Write or return the coupon below, and we will give you the name of the Republic Rubber Distributor located near you. You'll be glad you did.

In reply to your letter or coupon, Republic Rubber will send you a folder which shows 12 ways for you to save time and money.



TS REPUBLIC IN MY AREA?
BBER DIVISION
Corporation Ohio
State

WITT CANS have the right angle"

HE sturdy, straight sides of WITT Corrugated Cans provide far greater strength and stamina than can be obtained with the "tapered" design common among lower-grade cans. WITT Cans have a smooth, straight, inside surface . . . absence of "swedges" and other obstructions eliminate "clinging" of refuse, make WITT Cans easier to clean. The one-piece, lock seamed and electrically welded body is rolled into deep corrugations, the strongest known! Then the complete WITT Can is hot-dip galvanized-a hand process which gives the Can a rust-proof surface unequalled by any other method.

STRAIGHT SIDES Provide Rugged Strength . . . Greater Resistance to Rough Handling . . . Longer Wear!

THE WITT CORNICE COMPANY Cincinnati 14, Ohio

"Originators of the Corrugated Can"





Contract Work **Opportunities** 

#### RATES

Undisplayed (set solid) ..... 90¢ line Positions Wanted ...... 45¢ line

Displayed ......\$8.50 inch

#### REQUIREMENTS

Undisplayed (want-ad style), minimum charge 4 lines, prepaid. Figure forty-four letter spaces (five average words) to a line. Add one line for box number address; replies forwarded without charge.

Discount of 10% for twelve consecutive displayed insertions. Forms close 15th of month preceding date of publication.

Send orders to:

CLASSIFIED DEPARTMENT . PURCHASING 205 E. 42nd St., New York 17, N. Y.

# PAINTS OVER RUST! **RUSTREM STOPS RUST!** No priming, scraping, brushing



SPECO, Tuc. Cleveland 9, Ohio

DIRECTOR OF PURCHASES. Manufacturing, transportation, packaging experience. In Purchasing 22 years, supervisory capacities for last 10 years. Box 1213, PURCHASING, 205 E. 42 St., N. Y. 17.

# Nepsco **NEW ENGLAND** PRESSED STEEL COMPANY

Contract Manufacturers since 1914 of "Trouble Free"

METAL STAMPINGS SPECIALTIES - APPLIANCES For Industrial and Domestic Users

NATICK.

P. O. BOX 29
MASSACHUSETTS

PURCHASING AGENT desires opportunity offering merit advancement in construction or industrial field. Fifteen years diversified buying and allied experience. Box 1212, PURCHASING, 205 E. 42 St., N. Y. 17.

### POSITIONS WANTED

EXPERIENCED INDUSTRIAL Purchasing Agent, over 15 years' experience, graduate engineer, desires permanent connection with well-established and progressive manufacturer that offers a real future. Box 1215, PURCHASING, 205 E. 42 St., N. Y. 17.

PURCHASING AGENT or Director of Purchases: 29 years experience with large manufacturer electrical control apparatus-6 years as Purchasing Agent. Age 50 years, in excellent health. Available after May 7th. Your reply will be held in confidence if you wish. Box 1211, PURCHASING, 205 E. 42 St., N. Y. 17.

PURCHASING AGENT - St. Louis Area - Ten Years General Factory and Maintenance -Metal Fabrication — Steel, Aluminum, et Metal Fabrication -Aluminum, etc. Age 51, Married. Box 1218, PURCHASING, 205 E. 42 St., N. Y. 17.

# **BUYER'S & SELLER'S MART**

# PRECISION GAGES FOR SALE

LIST LESS 30%

VERNIER HEIGHT GAGES

200 to chose from Starrett #454 in 12", 18" and 24" Brown & Sharpe #585 in 18" and 24"

STANDARD DIAL BORE GAGES 400 to choose from

Gage #1, 2, 3, 4, 5 and 6, many extra lengths

Federal Model 1201P-0, -1, -2, & -3

MICROMETER DEPTH GAGES 500 to choose from

All 0 to 3" by Thousands Brown & Sharpe #607 & #607RS 21/2" Base

Lufkin #513 3" Base; Starrett #440B 4" Base

CARBOLOY TOOL BITS & BLANKS-15,000 in stock

Lufkin Radius Gages 1,000 Sets #77A, #77B, #77C

All items unconditionally guaranteed

# Automotive Hardware, Inc.

113 S. Meridian St., Indianapolis 4, Ind.

# SUPPLIERS FOR ALL YOUR

# STEEL

REQUIREMENTS

Write for Bulletin

# MIDLAND STEEL CORP.

150 BROADWAY, NEW YORK 7, N. Y., WOrth 4-8719

# STEEL BUILDINGS

Prefabricated

40' or 50' wide clear span, 12' high, any length. New. Immediate delivery. Will erect. Sash and door arrangements to suit. Limited quantity.

EDWARD J. BAILEY & COMPANY Mfgr. Prefabricated Steel Buildings

Duncan & Sepviva Sts., Phila. Pa.
DElaware 6-7600

# ATTENTION MANUFACTURERS of Small SHEET METAL PARTS

We Can Deliver New Steel

Galvanized, Cold Rolled or Hot Rolled, Pickled and Oiled — 18, 20 and 22 gauge; 2" and up in width; 1' and up in length.

We also have 18-8 Type 302 in #430 Polished Stainless Steel — 2" and up in width; 1' and up in length.

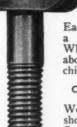
Advise us of your requirements.

Write Box 1219, PURCHASING, 205 E. 42nd St., New York 17.

# SCREW MACHINE PRODUCTS



1913-1949



Each Year Adds a Little More to What We Know about Screw Machine Products.

Check up with us

We may be able to show you a Real Saving on Parts — Up to 2½" Dia.—In

STEEL—BRASS ALUMINUM

## OLSON MANUFACTURING CO.

100 PRESCOTT ST., WORCESTER, MASS.

Offices: New York and Philadelphia

# OFFICE AND FACTORY SIGNS

Desk, Door, Name Plates, Wall Corridor, Parking Area, all over the plant. Sales Cars, Light Trucks, etc. Write for free sample and circular.

Hull Sign Co., Dept. PG-1, West Winfield, N. Y.

# STEEL

for

# INDUSTRY

Immediate Delivery

Warehouses

and

Fabricating Facilities

Write - Phone - Wire

# LONG ISLAND BEAM CO.

39-21 21st St. Long Island City 1, N. Y. Stillwell 6-5900-1-2-3

# **GREY IRON CASTINGS**

Thin wall - - - Attractive Prices

Wood and aluminum patterns

STEEL PRODUCTS CORP.
52 Vanderbilt Ave., New York 17, N. Y.



Yuba Offers You

## West Coast Contract Manufacturing

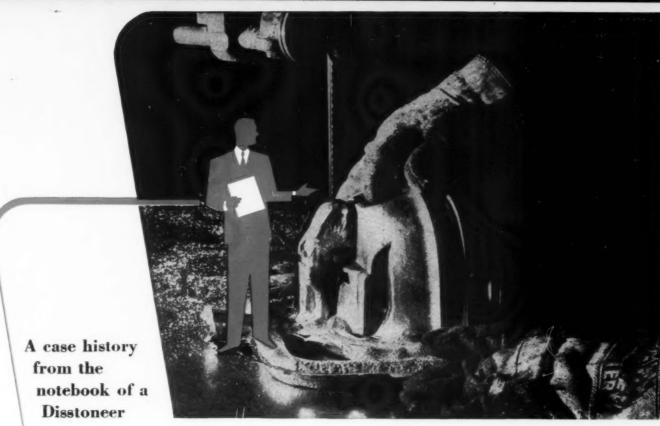
Complete steel fabricating and machine shop facilities, including iron foundry, pattern shop, forging and heat treating, welding. Topflight engineering staff.

Write or wire for further details.
YUBA MANUFACTURING COMPANY

Room 702, 351 California St., San Francisco 4,

# Udvertisers IN THIS ISSUE

Α .	Classified Advertising Section	Harper Co., H. M
Accurate Spring Mfg. Co	Cleveland Container Co., The 292	Harris & Co., Harry
Adam Electric Co., Frank 17	Cleveland Twist Drill Company 309 Colorado Fuel & Iron Corp., Wickwire	Hassall, Inc., John 228 Hinde & Dauch Paper Co. 261
Air Express Division, Railway Ex- press Agency	Spencer Steel Division28, 229, 273, 315	Hines Lumber Co., Edward 217
Air Reduction Sales Co. & Subsidiaries 224	DIRECTORY 250	riodell Chain Co., Div. National Screw
Aircraft-Marine Products, Inc	Consolidated Electric Lamp Co., Cham-	& Mfg. Co
Allegheny Ludlum Steel Corp. 231 Allen Mfg. Co. 288	pion Lamp Works	Hood Rubber Co. 318 Hotel Hollenden 246
Allison Company	Corbin Screw Corp. 47, 206	Howell Electric Motors Co
Alloy Steel Products Co	Crane Co 337	redución l'dip & l'aper Corporation 46
Customer Relations	Crocker-Wheeler Electric Mfg. Co. 189, 190 Cullman Wheel Co	
Distributors 181 Fasteners 313	Curtis Pneumatic Machinery Division. Curtis Manufacturing Company 41	
American Box Company	Curtis Manufacturing Company 41	Ideal Industries Inc 312
American Brass Co., The		Inland Steel Co. 5 Insulation Mfg Co., Inc. 328
American Chain Div., American Chain & Cable Co., Inc	D	International Nickel Co
American Chain & Cable Co., Inc. 84, 212,	Darling Valve & Mfg. Co 218	International Screw Co 47
American Felt Co	Darnell Corp., Ltd 330	International Staple & Machine Co 365
American Hoist & Derrick Co 292	Dayton Rubber Mfg. Co	
American Rivet Co	Detex Watchclock Corp 338	J
American Seating Co	Detrex Corp. 356 Disston & Sons, Inc., Henry 363	Jenkins Bros4th Cover
Amgears, Inc 192	Diversey Corp., The, Industrial Main-	Johnson Bronze Co
Amos Molded Plastics	tenance Department	Johnson Steel & Wire Co., Inc 310
Anaconda Copper Mining Co. & Sub-	Dravo Corp 218	
sidiary Cos	Dunbar Bros. Co. Div	K
An-Cor-Lox Division, Laminated Shim	E. I., Plastics Dept 235	Keasbey & Mattison Co 225
Co., Inc. 324 Arkwright Finishing Co. 160		Kex National Service
Armstrong Bros. Tool Co		Korhumel-Heffron & Preiss Steel Co 193
Associated Spring Corp 38	E -	
Athenia Steel Co	Eaton Mfg. Co	
Atlantic Steel Company	Elastic Stop Nut Corp. of America 59	Laulish Co
Atlas Boit & Screw Co	Electric Storage Battery Co	Laminated Shim Co., An-Cor-Lox Di-
	Erie Bolt & Nut Co	Vision
В	Etching Co. of America 344	Leschen & Sons Rope Co., A 198
Babcock & Wilcox Company, Refrac-	Ex-Cell-O Corporation 8	Lewis Spring & Mfg. Co
Reltimore & Ohio Pailrond Freight		Lord Baltimore Hotel 244
Department 345	F	Lord         Baltimore         Hotel         244           Lunkenheimer         Co.         270           Lyon         Metal         Products, Inc.         65
Department 345 Barnes Co., Wallace 38	Fastener Cornoration 248	Lord Baltimore Hotel
Baitmore & Ohio Railroad, Freight   Department   345   Barnes Co., Wallace   38   Barnes Co., Ltd., Wallace, The   38   Barnes Gibson-Raymond   38	Fastener Corporation	Lord Baltimore Hotel
Baitmore & Ohio Railroad, Freight   Department   345   Barnes Co., Wallace   38   Barnes Co., Ltd., Wallace, The   38   Barnes-Gibson-Raymond   38   Rauer & Black   260   Bay State Abrasive Products Co.   43	Federal Bearings Co., Inc. 199 Federal Electric Products Co. 10 Federal Products Corporation 298	Lord Baltimore Hotel 244 Lunkenhelmer Co. 270 Lyon Metal Products, Inc. 65
Baitmore & Ohio Railroad, Freight	Federal Bearings Co., Inc	Lord Baltimore Hotel 244 Lunkenheimer Co. 270 Lyon Metal Products, Inc. 65   M  MacRae's Blue Book 252 MacWhyte Co. 15
Baitmore & Ohio Railroad, Freight   Department   345   Barnes Co., Wallace   38   Barnes Co., Ltd., Wallace, The   38   Barnes -Gibson-Raymond   38   Rauer & Black   260   Bay State Abrasive Products Co.   43   Beall Tool Div., Hubbard & Co.   280   Gell Aircraft Corp.   49   Bemis Bro. Bag Co.   173	Federal         Bearings Co., Inc.         199           Federal         Electric         Products Co.         10           Federal         Products Corporation         298           Federated         Metals         Division, American           Smelting         & Refining Co.         36           Flexible         Steel         Lacing Co.         262	Lord Baltimore Hotel 244 Lunkenheimer Co. 270 Lyon Metal Products, Inc. 65   M  MacRae's Blue Book 252 MacWhyte Co. 15 Wack Molding Co. 354
Baitmore & Ohio Railroad, Freight	Federal Bearings Co., Inc	Lord Baltimore Hotel 244 Lunkenheimer Co. 270 Lyon Metal Products, Inc. 65   M  MacRae's Blue Book 252 MacWhyte Co. 15 Mack Molding Co. 354 Manheim Mfg. & Belting Co. 52 Marsh Corp., Jas. P. 194
Baitmore & Ohio Rallroad, Freight         345           Department         38           Barnes Co., Wallace         38           Barnes Co., Ltd., Wallace, The         38           Barnes-Gibson-Raymond         38           Rauer & Black         260           Bay State Abrasive Products Co.         43           Beall Tool Div., Hubbard & Co.         280           Rell Aircraft Corp.         49           Bemis Bro, Bag Co.         173           Besly Co., Charles H.         281           Bethlehem Steel Co.         186           Billings & Spencer Co.         208	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310	Lord Baltimore Hotel 244 Lunkenheimer Co. 270 Lyon Metal Products, Inc. 65   M  MacRae's Blue Book 252 MacWhyte Co. 15 Mack Molding Co. 354 Manheim Mfg. & Belting Co. 52 Marsh Corp., Jas. P. 194 Master Electric Co. 161 Mayers Co. L. & C. 350
Baitmore & Ohio Rallroad, Freight	Federal         Bearings         Co.         199           Federal         Electric         Products         Co.         10           Federal         Products         Corporation         298           Federated         Metals         Division         American           Smelting         & Refining         Co.         36           Flexible         Steel         Lacing         Co.         262           Foote         Bross         Gear         & Machine         Corp.         341           Forest         City         Foundries         Co.         220           Formica         Insulation         Co.         310           Foster         Co.         L.         B.         316	Lord Baltimore Hotel
Baltimore & Ohio Rallroad, Freight         345           Barnes Co., Wallace         38           Barnes Co., Ltd., Wallace, The         38           Barnes-Gibson-Raymond         28           Bauer & Black         260           Bay State Abrasive Products Co.         43           Beall Tool Div., Hubbard & Co.         280           Bell Aircraft Corp.         49           Bemis Bro. Bag Co.         173           Besly Co., Charles H.         281           Bethlehem Steel Co.         186           Billings & Spencer Co.         208           Binney & Smith Co.         214           Black & Decker Mfg, Co.         86           Blake & Johnson Co.         The           Blake & Johnson Co.         The	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         263, 266           Frasse & Co., Inc., Peter A.         263, 266	Lord Baltimore Hotel
Baitmore & Ohio Rallroad, Freight         345           Department         38           Barnes Co., Wallace         38           Barnes Co., Ltd., Wallace, The         38           Barnes-Gibson-Raymond         38           Rauer & Black         260           Bay State Abrasive Products Co.         42           Beall Tool Div., Hubbard & Co.         280           Bell Aircraft Corp.         49           Bemis Bro. Bag Co.         173           Besly Co., Charles H.         281           Bethlehem Steel Co.         186           Billings & Spencer Co.         208           Binney & Smith Co.         214           Black & Johnson Co., The         366           Boston Gear Works         156           Boston Woven Hose & Rubber Co.         203	Federal         Bearings         Co.         199           Federal         Electric         Products         Co.         10           Federal         Products         Corporation         298           Federated         Metals         Division         American           Smelting         & Refining         Co.         36           Flexible         Steel         Lacing         Co.         262           Foote         Bross         Gear         & Machine         Corp.         341           Formica         Insulation         Co.         310           Foster         Co.         L         B.         316           Foxboro         Company         The         265         266	Lord Baltimore Hotel
Baitmore & Ohio Rallroad, Freight         345           Barnes Co., Wallace         38           Barnes Co., Ltd., Wallace, The         38           Barnes-Gibson-Raymond         38           Bauer & Black         260           Bay State Abrasive Products Co.         43           Beall Tool Div., Hubbard & Co.         280           Bell Aircraft Corp.         49           Bemis Bro. Bag Co.         173           Bestly Co., Charles H.         281           Bethlehem Steel Co.         186           Billings & Spencer Co.         208           Binney & Smith Co.         214           Black & Decker Mfg. Co.         86           Blake & Johnson Co., The         366           Boston Gear Works         156           Boston Woven Hose & Rubber Co.         203           Bridgeport Brass Co.         227	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         263, 266           Frasse & Co., Inc., Peter A.         263, 266	MacRae's Blue Book
Baltimore & Ohio Rallroad, Freight         345           Barnes Co., Wallace         38           Barnes Co., Ltd., Wallace, The         38           Barnes-Gibson-Raymond         38           Bauer & Black         260           Bay State Abrasive Products Co.         43           Beall Tool Div., Hubbard & Co.         280           Bell Aircraft Corp.         49           Bemis Bro. Bag Co.         173           Besly Co., Charles H.         281           Bethlehem Steel Co.         186           Billings & Spencer Co.         208           Sinney & Smith Co.         214           Black & Decker Mfg. Co.         86           Boston Gear Works         156           Boston Woven Hose & Rubber Co.         203           Bridgeport Brass Co.         227           Brigs & Stratton Corp.         314           Brighton Screw & Mfg. Co.         262	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         263, 266           Frasse & Co., Inc., Peter A.         263, 266	MacRae's Blue Book
Baitmore & Ohio Rallroad, Freight	Federal Bearings Co., Inc. 199 Federal Electric Products Co. 10 Federal Products Corporation 298 Federated Metals Division, American Smelting & Refining Co. 36 Flexible Steel Lacing Co. 262 Foote Bros. Gear & Machine Corp. 341 Forest City Foundries Co. 220 Formica Insulation Co. 310 Foster Co., L. B. 316 Foxboro Company, The 265, 266 Frasse & Co., Inc., Peter A. 323 Fuller Brush Co. 322	MacRae's Blue Book
Baitmore & Ohio Rallroad, Freight	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American         36           Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         265, 266           Frasse & Co., Inc., Peter A.         323           Fuller Brush Co.         322	MacRae's Blue Book
Baitmore & Ohio Railroad, Freight	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American         36           Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         265, 266           Frasse & Co., Inc., Peter A.         323           Fuller Brush Co.         322           G           Carrett Co., Inc., George K.         168           Gates Rubber Co.         301           Gaylord Container Corp.         40           General Box Company         272	MacRae's Blue Book
Baitmore & Ohio Rallroad, Freight	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American         36           Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bross, Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         265, 266           Frasse & Co., Inc., Peter A.         323           Fuller Brush Co.         322           Garrett Co., Inc., George K.         168           Gates Rubber Co.         301           Gaylord Container Corp.         40           General Box Company         272           General Chemical Division, Allied	MacRae's Blue Book
Baitmore & Ohio Railroad, Freight	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American         36           Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         265, 266           Frasse & Co., Inc., Peter A.         323           Fuller Brush Co.         322           G           Garrett Co., Inc., George K.         168           Gates Rubber Co.         301           Gaylord Container Corp.         40           General Box Company         272           General Chemical Division, Allied         Chemical & Dye Corp.         179           General Electric Company         179	MacRae's Blue Book
Baitmore & Ohio Railroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Bauer & Black  Bay State Abrasive Products Co.  Bay State Abrasive Products Co.  Beall Tool Div., Hubbard & Co.  Beall Tool Div., Hubbard & Co.  Bell Aircraft Corp.  Bemis Bro. Bag Co.  Bell Aircraft Corp.  Besily Co.  Charles H.  Bethiehem Steel Co.  Billings & Spencer Co.  Billings & Spencer Co.  Billings & Spencer Co.  Black & Decker Mfg. Co.  Black & Johnson Co. The  Black & Johnson Co. The  Boston Gear Works  Boridgeport Brass Co.  Bridgeport Brass Co.  Bridgeport Brass Co.  Brigss & Stratton Corp.  Brighton Screw & Mfg. Co.  Bristol Brass Corm.  Brown & Sharpe Mfg. Co.  Brown Wille Paper Co.  BullDog Electric Products Co.  BullDog Electric Products Co.  Bussmann Mfg. Co.  Bussmann Mfg. Co.  Bussmann Mfg. Co.  32  33	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American         36           Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         265, 266           Frasse & Co., Inc., Peter A.         323           Fuller Brush Co.         322           G           Carrett Co., Inc., George K.         168           Gates Rubber Co.         301           Gaylord Container Corp.         40           General Box Company         272           General Chemical Division, Allied         Chemical & Dyc Corp.         179           General Electric Company         Apparatus Division34, 35, 44, 45, 53, 54           Construction Materials Division         183	M   MacRae's Blue Book   252
Baitmore & Ohio Railroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes Co., Ltd. Wallace, The  38 Barnes-Gibson-Raymond  38 Bauer & Black  Bay State Abrasive Products Co.  43 Beall Tool Div., Hubbard & Co.  280 Bell Aircraft Corp.  49 Bemis Bro. Bag Co.  173 Besly Co., Charles H.  281 Bethiehem Steel Co.  186 Billings & Spencer Co.  208 Billings & Spencer Co.  208 Bilney & Smith Co.  214 Black & Decker Mfg, Co.  86 Blake & Johnson Co., The Boston Gear Works Boridgeport Brass Co.  297 Briggs & Stratton Corp.  314 Brighton Screw & Mfg, Co.  262 Bristol Brass Corn.  191 Brown & Sharpe Mfg, Co.  264 Buffalo Bolt Co.  86 Bulfoo Electric Products Co.  43 Bussmann Mfg, Co.  32 33	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American         36           Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         265, 266           Frasse & Co., Inc., Peter A.         323           Fuller Brush Co.         322           Garrett Co., Inc., George K.         168           Gates Rubber Co.         301           Gaylord Container Corp.         40           General Box Company         272           General Chemical Division, Allied         Chemical & Dye Corp.         179           General Electric Company         Apparatus Division	M
Baitmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes Co., Utd., Wallace, The  38 Barnes Co., Ltd., Wallace, The  38 Barnes-Gibson-Raymond  38 Bauer & Black  Bay State Abrasive Products Co.  43 Beall Tool Div., Hubbard & Co.  280 Bell Aircraft Corp.  49 Bemis Bro. Bag Co.  173 Besly Co., Charles H.  281 Bethlehem Steel Co.  186 Billings & Spencer Co.  208 Billings & Spencer Co.  214 Black & Decker Mfg. Co.  86 Blake & Johnson Co., The  366 Boston Gear Works  156 Boston Woven Hose & Rubber Co.  297 Briggs & Stratton Corp.  314 Brighton Screw & Mfg. Co.  227 Briggs & Stratton Corp.  314 Brighton Screw & Mfg. Co.  228 Bristol Brass Coro.  191 Brownville Paper Co.  244 Buffalo Bolt Co.  6 BullDog Electric Products Co.  6 Bundy Tubing Co.  31 Bussmann Mfg. Co.  32 C C Carborundum Co., The  74, 75	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Products Corporation         298           Federated Metals Division, American         36           Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros. Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Foxboro Company, The         265, 266           Frasse & Co., Inc., Peter A.         323           Fuller Brush Co.         322           G           Garrett Co., Inc., George K.         168           Gates Rubber Co.         301           Gaylord Container Corp.         40           General Box Company         272           General Chemical Division, Allied         Chenical & Dye Corp.         179           General Electric Company         Apparatus Division         183           Industrial Laminates         171           Industrial Vacuum Cleaners         230           Lamp Division         157	MacRae's Blue Book
Baitmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Ltd., Wallace, The  Barnes-Gibson-Raymond  Bauer & Black Bay State Abrasive Products Co.  Bay State Abrasive Products Co.  Beall Tool Div., Hubbard & Co.  Beall State Abrasive Products Co.  Beall State Co.  Billings & Spencer Co.  Billack & Decker Mfg. Co.  Billack & Johnson Co., The  Boston Woven Hose & Rubber Co.  Boston Woven Hose & Rubber Co.  Briggs & Stratton Corp.  Briggs & Stratton Corp.  Brighton Screw & Mfg. Co.  Bristol Brass Coro.  Bristol Brass Coro.  Brown & Sharpe Mfg. Co.  Buffalo Bolt Co.  Buffalo Bolt Co.  Buffalo Bolt Co.  BullDog Electric Products Co.  Bundy Tubing Co.  Bussmann Mfg. Co.  Carborundum Co., The  Carraegie-Illinois Steel Corp.  Calance Illinois Steel Corp.  Colance Scorp. of America & Subsidi-	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American     Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   265, 266     Frasse & Co., Inc., Peter A.   323     Fuller Brush Co.   322     Fuller Brush Co.   301     Gaylord Container Corp.   40     Gaylord Container Corp.   40     General Electric Company   40     Chemical & Dye Corp.   179     General Electric Company   40     Apparatus Division   34, 35, 44, 45, 53, 54     Construction Materials Division   183     Industrial Laminates   171     Industrial Laminates   175     Cerson-Stewart Corporation   214     Gerson-Stewart Corporation   214	MacRae's Blue Book
Baitmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Ltd. Wallace, The  Barnes-Gibson-Raymond  Bauer & Black  Bay State Abrasive Products Co.  Bay State Abrasive Products Co.  Beall Tool Div., Hubbard & Co.  Beall Store Co.  Billings & Spencer Co.  Billings & Spencer Co.  Billings & Spencer Co.  Billings & Spencer Co.  Billings & Johnson Co., The  Black & Decker Mfg. Co.  Bilake & Johnson Co., The  Boston Woven Hose & Rubber Co.  Britgsport Brass Co.  Briggs & Stratton Corp.  Brighton Screw & Mfg. Co.  Brighton Screw & Mfg. Co.  Bristol Brass Corn.  Brown & Sharpe Mfg. Co.  BullDog Electric Products Co.  Carborundum Co., The  Bussmann Mfg. Co.  Carborundum Co., The  Carnegie-Illinois Steel Corp.  Carnegie-Illinois Steel Corp.  Carlos Corp.  Car	Federal Bearings Co., Inc.         199           Federal Electric Products Co.         10           Federal Electric Products Corporation         298           Federated Metals Division, American         36           Smelting & Refining Co.         36           Flexible Steel Lacing Co.         262           Foote Bros, Gear & Machine Corp.         341           Forest City Foundries Co.         220           Formica Insulation Co.         310           Foster Co., L. B.         316           Froxboro Company, The         263, 266           Frasse & Co., Inc., Peter A.         322           Fuller Brush Co.         301           Gaylord Container Corp.         40           General Box Company         272           General Chemical Division, Allied         Chemical Division, Allied           Chemical Electric Company         40           Apparatus Division         34, 35, 44, 45, 53, 54           Construction Materials Division         183           Industrial Laminates         171           Industrial Vacuum Cleaners         230           Lamp Division         157           Gerson-Stewart Corporation         214           Gerson-Stewart Corporation         214	MacRae's Blue Book
Baltmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes Co., Utd., Wallace, The  Barnes Co., Ltd., Wallace, The  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Co.  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Barnes-Gibson-Raymond  Co.  Baell Tool Div., Hubbard & Co.  Beall Tool Div., Hubbard & Co.  Beall For Barnes  Bag Co.  Co.  Berli Harcraft Corp.  Berli Bro.  Bag Co.  Co.  Berli Barnes Bro.  Baell Raymond  Baell Co.  Balake & Decker Mfg. Co.  Balake & Johnson Co.  Balake & Johnson Co.  Barnes-Gibson Gear Works  Barnes & Klubber Co.  Barligeport Brass Co.  Brighton Screw & Mfg. Co.  Brighton Screw & Mfg. Co.  Bristol Brass Corp.  Brownville Paper Co.  BullDog Electric Products Co.  BullDog Electric Products Co.  BullDog Electric Products Co.  Bundy Tubing Co.  Bundy Tubing Co.  Bussmann Mfg. Co.  Carborundum Co., The  Carnegie-Illinois Steel Corp.  Carnegie-Illinois Steel Corp.  Carnes Corp. of America & Subsidiary Cos.  Central Paper Co.  Central Paper Co.  Central Paper Co.  Central Screw Company  47 307	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American     Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   265   266     Frasse & Co., Inc., Peter A.   323     Fuller Brush Co.   322     Garrett Co., Inc., George K.   168     Gates Rubber Co.   301     Gaylord Container Corp.   40     General Box Company   272     General Chemical Division, Aliled     Chemical & Dye Corp.   179     General Electric Company   Apparatus Division   34, 35, 44, 45, 53, 54     Construction Materials Division   183     Industrial Laminates   171     Industrial Vacuum Cleaners   230     Lamp Division   157     Gerson-Stewart Corporation   214     Geuder, Paeschke & Frev Company   279     Gibson Co., William D., The   38     Globe Steel Tubes Co.   259     Goodrich Co., B. F.   4	MacRae's Blue Book
Baltmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes Co., Utd., Wallace, The  38 Barnes Co., Ltd., Wallace, The  38 Barnes Co., Ltd., Wallace, The  38 Barnes Gibson-Raymond  38 Bauer & Black  Bay State Abrasive Products Co.  43 Beall Tool Div., Hubbard & Co.  280 Bell Aircraft Corp.  49 Bemis Bro. Bag Co.  173 Besly Co., Charles H.  281 Bethlehem Steel Co.  186 Billings & Spencer Co.  208 Billings & Spencer Co.  214 Black & Decker Mfg. Co.  86 Blake & Johnson Co., The  366 Boston Gear Works  156 Boston Woven Hose & Rubber Co.  297 Brigks & Stratton Corp.  314 Brighton Screw & Mfg. Co.  262 Bristol Brass Corn.  191 Brownville Paper Co.  284 BullDog Electric Products Co.  64 BullDog Electric Products Co.  64 Bundy Tubing Co.  319 Bussmann Mfg. Co.  32 Central Paper Co.  261 Central Paper Co.  264 Central Screw Company  47 307 Century Electric Company  47 307 Century Electric Company  47 307 Century Electric Company  34 50 50 50 50 50 50 50 50 50 50 50 50 50	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American     Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   265, 266     Frasse & Co., Inc., Peter A.   323     Fuller Brush Co.   322     Fuller Brush Co.   301     Gaylord Container Corp.   40     Gaylord Container Corp.   40     General Box Company   272     General Chemical Division, Allied Chemical & Dye Corp.   179     General Electric Company   Apparatus Division   34, 35, 44, 45, 53, 54     Construction Materials Division   183     Industrial Laminates   171     Industrial Laminates   171     Industrial Vacuum Cleaners   230     Lamp Division   157     Gerson-Stewart Corporation   214     Geuder, Paeschke & Frey Company   279     Gibson Co., William D., The   38     Globe Steel Tubes Co.   259     Goodrich Co., B. F.   4     Coodyear Tire & Rubber Co., Inc.   39	MacRae's Blue Book
Baltmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes Co., Utd., Wallace, The  Barnes Co., Ltd., Wallace, The  Barnes-Gibson-Raymond  Bay State Abrasive Products Co.  Bay State Abrasive Products Co.  Bay State Abrasive Products Co.  Beall Tool Div., Hubbard & Co.  Beall Tool Div., Hubbard & Co.  Bell Aircraft Corp.  Bemis Bro. Bag Co.  173  Besly Co., Charles H.  Bethlehem Steel Co.  Billings & Spencer Co.  208  Bilnings & Spencer Co.  Billings & Spencer Co.  Billings & Spencer Co.  208  Binney & Smith Co.  214  Black & Decker Mfg. Co.  86  Boston Gear Works  156  Boston Gear Works  156  Boston Woven Hose & Rubber Co.  227  Brigss & Stratton Corp.  314  Brighton Screw & Mfg. Co.  262  Bristol Brass Corp.  Brownville Paper Co.  264  Buffalo Bolt Co.  BullDog Electric Products Co.  64  Bundy Tubing Co.  319  Bussmann Mfg. Co.  32  33  Carborundum Co., The  Carnegie-Illinois Steel Corp.  200, 201  Celanese Corp. of America & Subsidiary Cos.  219  Central Paper Co.  264  Central Screw Company  47, 307  Centrury Electric Company  3 Chandler Products Corp.  47	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   263, 266     Frasse & Co., Inc., Peter A.   323     Fuller Brush Co.   322     Fuller Brush Co.   301     Gaylord Container Corp.   40     General Box Company   272     General Electric Company   40     Chemical & Dye Corp.   179     General Electric Company   179     General Electric Company   171     Industrial Laminates   171     Industrial Vacuum Cleaners   230     Lamp Division   157     Gerson-Stewart Corporation   214     Geuder, Paeschke & Frey Company   279     Gibson Co., William D., The   38     Globe Steel Tubes Co.   259     Goodrich Co., B. F.   4     Goodyaar Tire & Rubber Co., Inc.   39     Gould Storage Battery Corp.   257     Graybar Electric Co., Inc.   82     Graybar Electric Co., Inc.   82     Graybar Electric Co., Inc.   82	MacRae's Blue Book
Baltmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes Co., Utd., Wallace, The  Barnes Co., Ltd., Wallace, The  Barnes-Gibson-Raymond  Bauer & Black  Bay State Abrasive Products Co.  Bay State Abrasive Products Co.  Beall Tool Div., Hubbard & Co.  Beall State Corp.  Bemis Bro. Bag Co.  173  Besly Co., Charles H.  281  Bethlehem Steel Co.  Billings & Spencer Co.  208  Billings & Spencer Co.  209  Billings & Spencer Co.  214  Black & Docker Mfg. Co.  266  Boston Gear Works  156  Boston Gear Works  156  Boston Woven Hose & Rubber Co.  203  Brigsport Brass Co.  227  Brigss & Stratton Corp.  314  Brighton Screw & Mfg. Co.  262  Bristol Brass Corp.  191  Brownville Paper Co.  264  Buffalo Bolt Co.  BullDog Electric Products Co.  64  Bundy Tubing Co.  319  Bussmann Mfg. Co.  32  33  Carborundum Co., The  74, 75  Carnegie-Illinois Steel Corp.  200, 201  Celanese Corp. of America & Subsidiary  Corp.  Central Paper Co.  264  Central Paper Co.  267  Central Paper Co.  268  Central Paper Co.  269  Central Paper Co.  260  Central Screw Company  47  Chase Brass & Copper Co., Inc.  Chester Hoist Division, National Screw	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American     Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   265   266     Frasse & Co., Inc., Peter A.   323     Fuller Brush Co.   322     Fuller Brush Co.   301     Gaylord Container Corp.   40     General Box Company   272     General Chemical Division Allied Chemical & Dye Corp.   179     General Electric Company   477     General Electric Company   278     Apparatus Division   34, 35, 44, 45, 53, 54     Construction Materials Division   183     Industrial Laminates   171     Industrial Laminates   171     Industrial Vacuum Cleaners   230     Lamp Division   214     Geuder, Paeschke & Frev Company   279     Gibson Co., William D., The   38     Globe Steel Tubes Co.   259     Goodrich Co., B. F.   47     Coodyear Tire & Rubber Co., Inc.   39     Girat Lakes Steel Corp.   147     Great Lakes Steel Corp.   147     Geral Corp.   147     Great Lakes Steel Corp.   147     Great Lakes Steel Corp.   147     Great Lakes Steel Corp.   147	MacRae's Blue Book
Baltmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes Co., Utd., Wallace, The  Barnes Co., Ltd., Wallace, The  Barnes Co., Ltd., Wallace, The  Barnes Co., Ltd., Wallace, The  Barnes-Gibson-Raymond  Sarnes-Gibson-Raymond  Barnes-Gibson-Raymond  Sarnes-Gibson-Raymond  Sarnes-Gibson	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   263, 266     Frasse & Co., Inc., Peter A.   323     Fuller Brush Co.   322     Fuller Brush Co.   301     Gaylord Container Corp.   40     General Box Company   272     General Electric Company   40     Chemical & Dye Corp.   179     General Electric Company   179     General Electric Company   171     Industrial Laminates   171     Industrial Vacuum Cleaners   230     Lamp Division   157     Gerson-Stewart Corporation   214     Geuder, Paeschke & Frey Company   279     Gibson Co., William D., The   38     Globe Steel Tubes Co.   259     Goodrich Co., B. F.   4     Goodyaar Tire & Rubber Co., Inc.   39     Gould Storage Battery Corp.   257     Graybar Electric Co., Inc.   82     Graybar Electric Co., Inc.   82     Graybar Electric Co., Inc.   82	MacRae's Blue Book
Baltmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Wallace  Barnes Co., Ltd. Wallace, The  Barnes Co., Ltd. Wallace, The  Barnes-Gibson-Raymond  Bauer & Black  Bay State Abrasive Products Co.  Bay State Abrasive Products Co.  43 Beall Tool Div., Hubbard & Co.  280 Bell Aircraft Corp.  49 Bemis Bro. Bag Co.  173 Besly Co.  Co.  Besly Co.  Charles H.  Bethiehem Steel Co.  Billings & Spencer Co.  208 Billings & Spencer Co.  208 Billings & Spencer Co.  208 Binney & Smith Co.  214 Black & Decker Mfg. Co.  86 Blake & Johnson Co. The  366 Boston Gear Works  Boridgeport Brass Co.  227 Brigsp & Stratton Corp.  314 Brighton Screw & Mfg. Co.  262 Bristol Brass Corn.  191 Brown & Sharpe Mfg. Co.  274 Buffalo Bolt Co.  86 BullDog Electric Products Co.  64 Bundy Tubing Co.  284 Buffalo Bolt Co.  87 Bussmann Mfg. Co.  293 Central Screw Company  47, 75 Century Electric Company  47, 307 Century Electric Company  47, 307 Century Electric Company  47 Chase Brass & Copper Co., Inc.  297 Chester Hoist Division, National Screw  & Mfg. Co.  187 Chicago Rawhide Mfr. Co.  187 274 Chicago Rawhide Mfr. Co.  187 276 Chicago Rawhide Mfr. Co.  288 288 288 288 288 288 288 288 288 2	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American     Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   263, 266     Frasse & Co., Inc., Peter A   322     Fuller Brush Co.   301     Gaylord Container Corp.   40     General Box Company   272     General Chemical Division, Allied Chemical & Dye Corp.   179     General Electric Company   40     Apparatus Division   34, 35, 44, 45, 53, 54     Construction Materials Division   183     Industrial Laminates   171     Industrial Vacuum Cleaners   230     Lamp Division   157     Gerson-Stewart Corporation   214     Geuder, Paeschke & Frev Company   279     Gibson Co., William D., The   38     Globe Steel Tubes Co.   259     Goodyear Tire & Rubber Co., Inc.   39     Gould Storage Battery Corp.   257     Graybar Electric Co., Inc.   82     Great Lakes Steel Corp.   147     Grinnell Co., Inc.   23	MacRae's Blue Book
Department	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American     Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   265, 266     Frasse & Co., Inc., Peter A.   323     Fuller Brush Co.   322     Garrett Co., Inc., George K.   168     Gates Rubber Co.   301     Gaylord Container Corp.   40     Gaylord Container Corp.   40     General Box Company   272     General Chemical Division, Allied Chemical & Dye Corp.   179     General Electric Company   Apparatus Division   34, 35, 44, 45, 53, 54     Construction Materials Division   183     Industrial Laminates   171     Industrial Laminates   171     Industrial Vacuum Cleaners   230     Lamp Division   157     Gerson-Stewart Corporation   214     Geuder, Paeschke & Frev Company   279     Gibson Co., William D., The   38     Globe Steel Tubes Co.   259     Goodrich Co., B. F.   4     Coodyear Tire & Rubber Co., Inc.   39     Gould Storage Battery Corp.   257     Graybar Electric Co., Inc.   23     Girson-Inc.   23     H	MacRae's Blue Book
Baitmore & Ohio Rallroad, Freight Department  Barnes Co., Wallace  Barnes Co., Ltd., Wallace, The  Barnes Co., Ltd., Wallace, The  Barnes-Gibson-Raymond  Bauer & Black  Bay State Abrasive Products Co.  Bay State Abrasive Products Co.  43 Beall Tool Div., Hubbard & Co.  Beell Aircraft Corn.  Bemis Bro. Bag Co.  173 Besly Co., Charles H.  281 Bethlehem Steel Co.  186 Billings & Spencer Co.  208 Binney & Smith Co.  214 Black & Decker Mfg. Co.  Balake & Johnson Co., The  366 Boston Woven Hose & Rubber Co.  227 Briggs & Stratton Corp.  314 Brighton Screw & Mfg. Co.  262 Bristol Brass Corn.  191 Brown & Sharpe Mfg. Co.  364 BullDog Electric Products Co.  47 Bundy Tubing Co.  319 Bussmann Mfg. Co.  244 Bundy Tubing Co.  325 Bussmann Mfg. Co.  264 Central Screw Company  37 Central Paper Co.  264 Central Screw Company  47, 307 Century Electric Company  37 Champion Lamp Works  196 Chaage Rawhide Mfg. Co.  207 Chester Hoist Division, National Screw  & Mfg. Co.  170 Chicago Rawhide Mfg. Co.  376 Chicago Rivet & Machine Co.  38 Batter State Corp.  48 Chicago Rivet & Machine Co.  38 Batter State Corp.  47 Chicago Rivet & Machine Co.  38 Batter State Corp.  48 Chicago Wheel & Mfg. Co.  38 Batter State Corp.  48 Chicago Wheel & Mfg. Co.  37 Chicago Rivet & Machine Co.  38 Batter State Corp.  48 Batter State Corp.  49 Chicago Rivet & Machine Co.  37 Chicago Rivet & Machine Co.  38 Batter State Corp.  47 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  37 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  37 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  37 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  37 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  37 Chicago Rivet & Machine Co.  36 Chicago Rivet & Machine Co.  37 Chamber Products &	Federal Bearings Co., Inc.   199     Federal Electric Products Co.   10     Federal Products Corporation   298     Federated Metals Division, American     Smelting & Refining Co.   36     Flexible Steel Lacing Co.   262     Foote Bros. Gear & Machine Corp.   341     Forest City Foundries Co.   220     Formica Insulation Co.   310     Foster Co., L. B.   316     Foxboro Company, The   263, 266     Frasse & Co., Inc., Peter A   322     Fuller Brush Co.   301     Gaylord Container Corp.   40     General Box Company   272     General Chemical Division, Allied Chemical & Dye Corp.   179     General Electric Company   40     Apparatus Division   34, 35, 44, 45, 53, 54     Construction Materials Division   183     Industrial Laminates   171     Industrial Vacuum Cleaners   230     Lamp Division   157     Gerson-Stewart Corporation   214     Geuder, Paeschke & Frev Company   279     Gibson Co., William D., The   38     Globe Steel Tubes Co.   259     Goodyear Tire & Rubber Co., Inc.   39     Gould Storage Battery Corp.   257     Graybar Electric Co., Inc.   82     Great Lakes Steel Corp.   147     Grinnell Co., Inc.   23	MacRae's Blue Book



Disston Hard Edge Flexible Back Band Saw (Buttress Tooth Pattern) cutting aluminum alloy castings in plant of a California foundry.

# How a DISSTONEER helped save 2½ to 3 hours per day on a metal-cutting band saw job . . .

# He may be able to do as much for you

This foundry was cutting aluminum alloy castings, used for the cap ends of cylinder type vacuum cleaners. The pieces cut are 8'' in circumference and  $\frac{1}{2}''$  thick (one gate runs 4'' high and 1'' thick).

A buttress tooth band saw blade,  $18' \times \frac{12''}{2} \times 4T$ , was being used. Blades were not clearing on the contour cutting, thus causing them to lead off and spoil castings. Also, blades were wearing out too fast. The company was getting little more than 15 castings per blade.

The Disstoneer recommended a Disston Buttress Tooth Pattern Flexback blade,  $18' \times \frac{1}{8}'' \times 4T$ ...only a slight change, but what a difference in results! The number of castings per blade was increased to 50. But, of even greater importance than saving blade-costs and reducing down time, production was speeded up to a point where  $2\frac{1}{2}$  to 3 hours per day were saved.

After the trouble was eliminated, the Disstoneer was told, "I knew you could help me, that's why I called you. I'm very well pleased with the change, and quite happy."

Like this foundry, and hundreds of other manufacturers who have profited from Disstoneer service, you, too, will be "very well pleased" with the savings he can make for you. He will be glad to call at your convenience and without charge or obligation.

Write for full particulars, or get in touch with your local Disston Distributor

# DISSTON BUTTRESS TOOTH PATTERN HARD EDGE FLEXIBLE BACK BAND SAW

Designed for machines operating at speeds of 3000 fpm or over. Wide tooth spacing allows faster feed as wider gullet provides greater chip clearance. Recommended for magnesium and aluminum alloys.

WHEN YOU BUY A DISSTON PRODUCT YOU





NG

HENRY DISSTON & SONS, INC., 333 Tacony, Philadelphia 35, Pa., U.S.A.

Ohio Div., Association Spring Corp Ohio Injector Co., The Okonite Co	38 24 236 298 254 234 158 316
Р	
Page Fence Association, American Chain & Cable Co., Inc. Page Steel & Wire Div., American Chain & Cable Co., Inc. Pannier Corp. Parker-Kalon Corp. Parker-Kalon Corp. Pawtucket Screw Co. Peck Spring Co. Penfax Sales Co., Div., Pennsylvania Flexible Metallic Tubing Co. Perkins Machine & Gear Co. Pheoli Mfg. Co. Phillips Screw Manufacturers Pittsburgh Plate Glass Co., Brush Division Plymouth Cordage Co. Powell Co., William Pyott Foundry & Machine Co.	56

		63.
an		Sa
***	280	5:
an		S
SEEK.	330	S
	158	50
7.	277	S
	47	SI
****		SI
	342	
ia		SI
	269	Sl
****	174	81
	400	Si
***	47	Si
i -	2.6	S
11-		Se
****	331	
79	. 80	S
	56	SI
	354	SI
		Sc
		SI

		Q		
Quaker	Rubber	Products	*************************	287

R	
Railway Express Agency, Inc., Air Express Div.	320
Rapids Standard Co., The	268
Rathborne, Hair & Ridgway Co Raymond Mfg. Co.	81 38
Reading Screw Co.	47
Reliable Spring & Wire Forms Co	355
Republic Rubber Division	243
Republic Steel Corp.	237
Revere Copper & Brass Inc. Revolvator Co.	176
Reynolds Metals Co.	347

Ridge	Tool (	Co., Th	e		**********
tiegel	Texti	le Cor	13		*********
tising	Paper	Co.		**********	**********
Roeblin	ig's Sc	ns Co.	John	A	51
tolock	Inc.		1 000000	**********	
tussel	. Bure	Isall &	Ward	Bolt &	Nut
E'a					477

# S

Safety Socket Screw Co	20
Sandvik Steel, Inc. Sawyer & Son Co., The H. M.	- 5
Sawyer & Son Co., The H. M.	6
Schnell Publishing Co.	35
Scovill Mfg. Co.	4
Security Steel Equipment Corp.	24
Shakeproof, Inc. 47,	27
Sheldon Machine Co., Inc.	31
Shenango-Penn Mold Co.	29
Sheppard Envelope Co.	
Signode Steel Strapping Co.	24
Simonda Coan & Mrs. Co.	
Simonds Gear & Mfg. Co.	18
Simonds Saw & Steel Co	7
SKF Industries, Inc. Southern Pine Association	16
Couthington III Association	
Southington Hdwe, Mfg. Co.	4
Speed Products Co., Inc247,	24
Sponge Rubber Products Co	32
Square D Company	2
Standard Pressed Steel Co.	34
Stanley Works, The228,	
Starrett Co., The L. S.	16
Steel Co. of Canada Ltd	4
Stemco Corp., The	33
Sterling Bolt Co.	4
Strom Steel Ball Co.	28
Stronghold Screw Products. Inc.	4
Stuart Oil Co., Ltd., D. A.	22
Sun Oil Co.	29
Superior Foundry, Inc.	32
Superior Steel Corp.	34
Sylvania Electric Products, Inc.	28

## .

T	
Taylor Forge & Pipe Works Templeton Kenly & Co	284
Thermoid Co. Timken Roller Bearing Co. Tourek Mfg. Co., J. J. Tri-Lok Company	348

Trimont	Mfg.	Co.	******		******	263
Triner S	cale d	& 1	Mfg.	Co.	********	304
Trumbull	Elect	ric	Mfg.	Co.	****************	177

#### 11

Udylite Corp. 1 Union Bag & Paper Corp. 1 U. S. Gutta Percha Paint Co. 3 U. S. Steel Supply Co. 18, 2	Uarco, Inc	249
Union Bag & Paper Corp 1 U. S. Gutta Percha Paint Co 3	Udylite Corp.	4
	Union Bag & Paper Corp	1

# V

	ric Cor	p		364
	Works.		************************	208
			*********	318

#### W

Wagner Litho Machinery Co	9
Waldes Kohinoor, Inc.	71
Walworth Co	42
	49
Weirton Steel Co 3	11
Weldon Roberts Rubber Co 2	54
	55
Western Brass Mills, Division of Olin	57.0
	64
Westinghouse Electric Corp204, 20	)5.
3rd Cov	
Lamp Division 2	27
	18
Whitney Chain & Mfg. Co	60
Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp	
Fuel & Iron Corp28, 229, 273, 3	15
Williams & Co., J. H 3	35
	08
	60
	84
Wolf & Co., Ltd., S 3	38
Wolverine Bolt Co.	47
Woodall Industries 2	09
Wood Office Furniture Institute 2	41
	9
Wright Hoist Div., American Chain &	
Cable Co., Inc.	84
Wrought Washer Mfg. Co 1	92
V	

Youngstown Sheet & Tube Co. ...... 153

at 1 chus fact

# Here's Your MOTOR





# IT'S COOL RUNNING IT'S ECONOMICAL TO OPERATE

Selecting a power unit for especially designed machinery or for standard equipment is not a difficult task when you consider that VALLEY MOTORS are built to meet any design demand.

Furthermore, you have the added assurance of dependability because of the nation-wide acceptance by machinery manufacturers in all industries who have used VALLEY MOTORS for many years.

Why Not Check Into VALLEY Features



# VALLEY ELECTRIC CORPORATION

4221 FOREST PARK BLVD. . ST. LOUIS 8, MO.

# DETECTO SCALES

There's a precision-accurate Detecto Scale for your specific weighing and counting need. The Detecto helps increase production, yet assures you maximum accuracy by making slightest weight discrepancies immediately visible.

## No. 1800 DETECTO-GRAM INDICATOR HEAD

One more Detecto weighing instrument to speed production. This attachment converts your present beam scales to accurate weighing equipment. Indicator stops instantly at correct weight.

Write for Literature



# DETECTO · SCALES · INC.

543P PARK AVENUE

BROOKLYN 5. N.

SCALE ENGINEERS IN ALL PRINCIPAL CITIE

M



# The sharpest savings ever known for "The sharpest edges ever honed!"

This is the new INTERNATIONAL STAPLE installation at The Gillette Safety Razor Company, Boston, Massachusetts. Gillette has long been one of our customers, in fact one of our very first machines was used in their factory.

Now a brand new Model C2E, pneumatically operated INTERNATIONAL STAPLE MACHINE is closing filled cartons from the outside . . . tops and bottoms simultaneously.

You can well imagine the savings involved, when we point out the simplicity of the carton closing operation; the operator places the filled carton on the roller table, an automatic centering device puts the carton in the proper place between the Staple heads, and then a trip of the foot treadle drives a Staple in both the top and the bottom simultaneously. The Operator then moves the carton along and repeats the process . . . closing cartons at the rate of 400 per hour!

Yes, Gillette is shaving more than faces these days . . . they are shaving shipping room costs with INTERNATIONAL RETRACTABLE ANVIL STAPLE MACHINES.





EST. 1938

# INTERNATIONAL STAPLE & MACHINE COMPANY

HAVERTOWN 10, PENNA.

Distributors in principal Cities

A.M.A. SHOW . ATLANTIC CITY . MAY 10-13 . BOOTH 323

MARCH, 1949

NG

Want Additional Product Information? See Page 19.

365



This "portable (!) range" was considered a miracle of convenience in 1887. It had a patent hinge to safeguard the proud owners from asphyxiation! And it may even have featured Blake & Johnson stove bolts. When the "Jolly Cook" was born, we had been serving cooking and heating equipment manufacturers (among others) for 38 years!

100 years of business as the same company—under the same name—places us among the ancients in American industry. But harden-

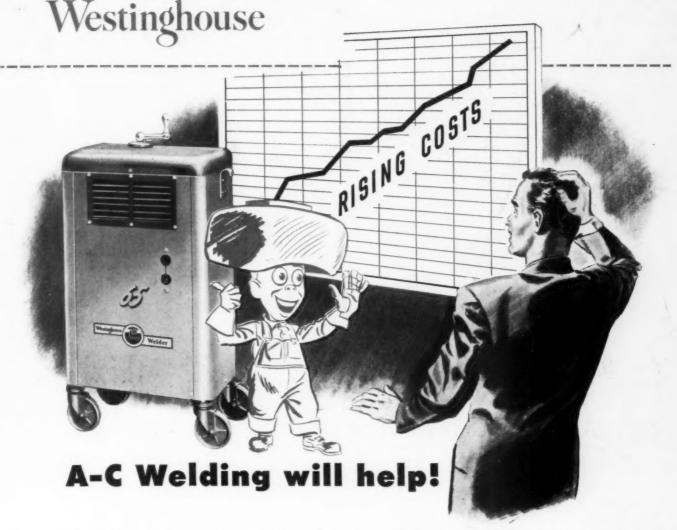
ing of the arteries has never set in! Only six years ago, Blake & Johnson introduced the most revolutionary advance in the history of fastenings—the Twin-Fast twin thread wood screw, now accepted everywhere as the wood screw of today and tomorrow. Knowing that the first 100 years are the hardest, manufacturers can be sure that Blake & Johnson, too, is here to stay!

Write for catalog of complete line of Blake & Johnson fastenings.



a Century of MANUFACTURING OF FASTENING DEVICES FOR INDUSTRY

YOU CAN BE SURE .. IF IT'S



The typical experience of an eastern manufacturer demonstrates how Westinghouse a-c welding equipment can help you to offset rising operating costs. Using 27 newly-installed Westinghouse a-c machines, this customer enjoys a monthly saving of \$810.00 in power costs alone . . . enough to pay for the entire installation in 18 months!

The Westinghouse Flexarc "65" pictured above, has all the features that contribute to this kind of cost slashing performance. Its higher electrical efficiency and lower "no load" losses mean lower power bills. Its lack of moving parts means substantially reduced maintenance expense. Its ability to provide good welds, faster, means fewer man hours and an attractive saving in wages.

Flexarc "65" welders are available in 200, 300, 400 and 500-ampere ratings and operate with an open-circuit secondary voltage of only 65 volts. Arc striking

is easy and good arc stability is maintained without the addition of troublesome gadgets.

Westinghouse welding engineers are ready to assist you in planning the switch from d-c to a-c or in applying a-c to jobs where you have not before considered

welding. But first, get the complete story on the advantages of a-c welding in booklet B-4199. Address: Westinghouse Electric Corporation, P.O. Box 2025, Buffalo 5, N.Y.







Now, for the most severe services, you can choose the new Jenkins Fig. 976-A with complete confidence that it will set new economy records. Use it for pressure regulation, bleeds, drips, and drains, or any close regulation of steam that threatens wire drawing. It will lower maintenance, last longer, where entrapped pipe chips, scale, or rust tubercles are a problem.



SMASHED PIPE CHIPS,

WIRE, LEAVE NO SCARS

Steel pipe chips and ½6" wire rad, with Brinell hardness in excess of 300, were crushed between the new Jankins JX500 Plug and Seat Ring without leaving a scratch or dent. That's proof of super hardness!

Compare Fig. 976-A, part for part, and see why it's as nearly wear-proof, trouble-proof, and maintenance-free as any stock valve can be. Only a few of the dozen ways it's better are shown here. Get the complete story in the new folder. See why it's unrivalled for endurance and economy,—why it's your best buy in plug-type valves! Use coupon.

Jenkins Bros., 80 White St., New York 13; Bridgeport, Conn.; Atlanta; Boston; Philadelphia; Chicago; San Francisco. Jenkins Bros., Ltd., Montreal.



JENKINS VALVES

Types, Sizes, Pressures, Metals for Every Need

JENKINS Fig. 976-A

PLUG TYPE

BRONZE GLOBE VALVE

# NEW "TUFFARD" SPINDLE

Aluminum bronze of tensile strength exceeding 65,000 lbs.—tough to take stresses, hard for long wear. Bigger in diameter — more strong threads.

#### NEW SLIP-ON, STAY-ON PLUG

Simple design with I-slot for engaging spindle head is stronger, troublefree, permits free flow. Mirror-finished bevel assures perfect mating with seat ring.

#### MORE THREADS, LESS WEAR

Additional threads in bonnet and on spindle assure full thread engagement —apen or "closed less load, less wear per thread.

#### NEW STURDY LUGS

Fi at - f a c e d, V-shaped lugs on union bonnet ring and body ends permit firm lit and grip of open end, pipe, or mankey wrench, —withstand repeated disassembly.

#### 500 BRINELL ARMOR SEAT DE-FEATS TOUGHEST VALVE ENEMIES

Plug and Seat Ring of Jenkins JX500 special ailoy stainless steel heat freated to 500 Brinell hardness and extra-ordinary ductility-lapped together to a mirror finish. Unaffected by throttled steam, resists galling, erosion, corrosion.

300 lbs. Steam

600 lbs. O.W.G.

GET COMPLETE DETAILS-IN THIS NEW FOLDER

JENKINS BROS., 80 WHITE ST., NEW YORK 13
Please send Armor Seat Valve folder — Form 193

Name.

Company.

Address

